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Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES

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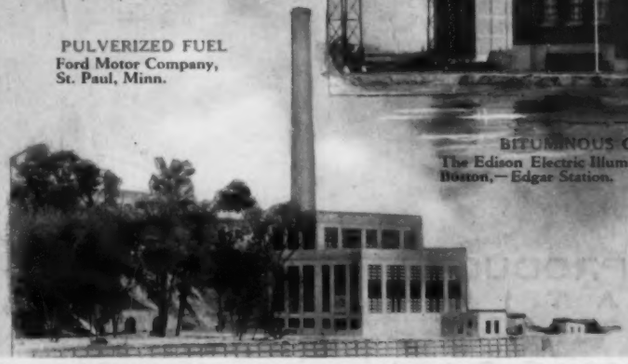

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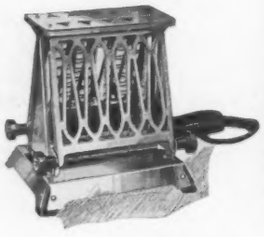

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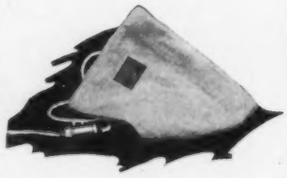

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IN THE ELEVEN WESTERN STATES

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Hail, 1926!

HERE is 1926, another milestone along the highway of progress toward better things. Somehow, the load curve of evolution is not drawn upon a steadily rising scale but has its peaks and valleys, its starts and stops, and its ups and downs, even as Life itself. There will be a lull, a temporary hiatus during which it seems as though nothing were being done. Then will come a spurt, a sharp rise, when progress in a marked degree is almost of daily occurrence.

This year of 1926 will be one of the "spurt" type. There is no doubt about it whatever. It would seem that the electrical industry for five years or more has been resting on its oars, in reality gathering energy and, even more, a conviction that in the electrical idea carried to its ultimate lies the emancipation of mankind from the slavery of manual labor.

There is nothing perfunctory or trite in the expression of the customary Season's Greetings to our many friends whom it is our pleasure and privilege to serve. With all signs pointing to a coming season of unprecedented activity in every branch of the industry, with a sound financial and political structure throughout the nation as a whole, what more could one ask?

The duty that lies before us, therefore, is one of service, to render in full the best that is within us, to our customers, our fellow-workers and especially to the industry itself, that nothing may happen that will mar the splendid record of accomplishment that lies behind us.

Happy New Year, to everybody, individually and collectively, with the hope that the men of the industry in our eleven Western states may measure up to the great opportunity that lies before them.

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EDITORIAL

The Farmer Sees the Light

DEPLORING what they call "the present tendency in America, and particularly in California, for cities to act as if they believed themselves independent of the back country," the farmers of California have entered the condemnation proceedings against the distribution systems of the Pacific Gas and Electric Company and the Great Western Power Company in the city of San Francisco. As reported on another page of this issue, the California Farm Bureau Federation, comprising 25,000 farmers of the state, has filed with the State Railroad Commission a lengthy brief in which it demands that any plan which proposes to separate the city distribution systems of existing power companies from the country distribution plants must protect adequately the farmers and small town consumers against damage or increased rates.

The filing of the protest is proof that in its educational efforts the light and power industry has not been remiss. The farmer, at least, realizes that a cheap and dependable supply of electric power is vital to the welfare and success of the rural districts. He also realizes, as the brief specifically points out, that electric service today requires coordination of widely separated generating plants; that the business requires feeding from a common pool widely varying demands from different classes of loads. He knows that under the present laws electric consumers in San Francisco with municipal distribution would escape taxes, with a resultant loss in state revenue which would have to be made up from other sources. And the farmer says:

"The action of the city of San Francisco in this case is a step backward; it represents retrogression, not progress—a splitting up of the system load into its elementary parts.

"Electric service in California is rendered by systems, not by cities. All elements are interdependent—each helps the others. San Francisco is proposing to condemn local properties and businesses; is proposing to take from consumers a part of which now serves them. We have the right to demand that if such a proceeding is consummated, it must be upon a basis that will leave rural consumers forever as well off as they would otherwise have been."

Some journalist recently said that the advent of the automobile, electric lights, radio and the motion picture had changed the farmer from the "hayseed" of a decade ago to a smart, sophisticated, thrifty and successful citizen, as well versed in the affairs of the world as his city cousin. It has done more than this. It has strengthened the inseparable bond between city and back country upon which the success of both depends.

The city of San Francisco will do well to think twice before it takes a step which will injure the rural sections of California, first, because the ire of the farmer today is a thing to be reckoned with, and second, because without the support and cooperation of the back country, the city cannot succeed.

Is This Member of the Electric Family Suffering From Sleeping Sickness?

TO repeat an oft asked question, "What's wrong with the electric truck?" Every so often there is a blast of trumpets and a flare of red fire and the electric truck takes the center of the stage. Then suddenly the excitement dies down, only to be renewed again with headline announcements of power company policy, following which interest once more subsides and the reborn sinks into oblivion.

Notwithstanding careful study, the answer to the question is not fully apparent. Inquiry of power-company executives indicates a hearty support to the electric truck, yet to the uniniated it would seem that the attitude is like that of the baker who advertised the splendid merits of his output, yet permitted his family to buy a competitor's product for home consumption.

An unbiased point of view inclines one to the belief that both the electric truck companies and the power companies are at fault; the former on account of earlier failures to meet intelligently the demands of the latter; the power companies in turn failing to realize the high efficiency of the modern electric truck.

Ignoring, however, the placing of the responsibility for the present situation on the Pacific Coast, where interest in the electric truck is certainly lax, investigation of the subject from other than an insular point of view develops many interesting facts. These at least indicate that there is either a lack of understanding on the Pacific Coast or an unwillingness even to seek out the facts. Here are some of them.

Electric trucks exclusively are used by the Commonwealth Edison Company of Chicago.

The electric truck fleet of the New York Edison Company has grown constantly year after year until it now has more than 300 units in the service of its affiliated companies.

The electric truck fleet of the American Railway Express Company is now close to the 2,000-mark and growing rapidly each year.

One bakery in San Francisco operates electric trucks exclusively, having more units traveling over the hills of the city than there are operating in the service of all power companies in California combined.

Obviously, the conclusion must be reached that the electric truck is a decided factor in city transportation. It would seem that the initial question might, in the face of these facts, be changed to "What is wrong with the power companies?"

According to the best information obtainable, the following appear to be the principal and most logical reasons why any individual power company should use and promote the sale of electric trucks:

1. In 1924 the average revenue from electric trucks amounted to $153.10. Seventy-five per cent of city hauling can be handled economically by electric trucks. How much off-peak revenue is your company losing?

2. Why buy gasoline when you can do your own work better and at less cost with your own product —electric power?

3. Modern electrics speed up traffic and reduce congestion. Time saved is money saved.

4. Electric trucks balance load factor. No better outlet for off-peak power is provided than the electric truck. Seventy one-ton trucks in operation by a bakery use each year 1,302,000 kw-hr.

5. An electric truck is a splendid advertisement for electricity. To promote the sale of electrics and yet continue to use gas trucks where electrics could be used is equivalent to saying, "We believe in electric trucks for the other fellow."

It would seem that we have touched upon a member of our electric family which is suffering from sleeping sickness. Our columns are open for a frank discussion of his ailments, and we shall be glad to call in other diagnosticians and physicians to pronounce judgment or assist in curing the patient.

A Pretty Gesture, but Rather Expensive

WHEN a new building, a new theater, or a new public work is ready for the customary dedication exercises, there appear in the public prints in laudatory terms whole pages of advertisements dedicated to the congratulation of whoever is responsible for the new labor. These make very pretty pages, and no doubt the individual or company thus congratulated is moved to pride in the thought that public interest is sufficient to bring forth such a tribute.

But back of the lines there has been some enterprising newspaper advertising salesman, and he has used upon these individual advertisers a padded club to bring forth such pretty speeches so that his paper might garner additional revenue. Each new building offers these salesmen an extra pot of advertising revenue. So sure, so profitable have been their efforts in this direction that they have not been content with only one such special page for any given enterprise, now they go after a special page when a new project is announced, and again for another bleeding of the constructors when the building is finished.

The power-company advertising men realizing this to be an evil, through their representatives in the Advertising Section of the Pacific Coast Electrical Association have gone on record for the abatement of this advertisement nuisance. But the electrical contractor, along with the architect, builder, concrete man, plasterer, painter, and what not, still is being milked by this polite form of blackmail.

This situation presents a problem for the Electragists to study and handle, even as the question of donations for charity, buying of tickets, and such other solicitations in a city usually are handled by chambers of commerce or merchants' associations. After all, these special editions are themselves nothing but solicitations for charity on the part of the newspaper. There is very little or any value received for the dollar invested in such advertising. The character of the advertising is such that it must be congratulatory, not of selling nature. In effect it is a bouquet of expensive flowers cast at the feet of the owner of the new building.

So serious a drain is this congratulatory flower-throwing to an electrical contractor that the flowers often must be bought at the sacrifice of something of real business-getting nature. One contractor claimed recently that he spent an average of $275 a month in this form of laudation. In fact he felt that this demand upon his budget was so great that he could not afford to pay $10 a month for a merchandising service which would help him to develop more sales in his store.

If they but realized it, those newspapers which resort to this form of exploitation are in a measure killing the goose which lays their golden eggs. Advertising in essence should be printed salesmanship. As such, developed to an effective degree, it should be used more and more by electrical interests as times goes on. Money spent on congratulatory advertising, bringing no results, is apt to throw any form of advertising into discredit, a reaction which eventually will hurt the very publications now resorting to this sort of bonanza-seeking.

Second Down, and Ten Months To Go

FOOTBALL has become so general a topic that it is easy to speak in terms of that great American game. It is only natural then that when signals are being called on an old issue an analogy to football may be applied to it.

For two successive downs the well known old brightly colored Water and Power Act has been thrown for a loss. And if in the weariness of the scrimmage many of the spectators have thought the game over, the sound of signals from the defeated team, heard in press reports already in those quarters where such visions never seem to die, has dispelled the hope. It looks as though the two teams would have to line up for another tussle.

Two colleges of thought face each other in this

game, a game of the people against the people. They are the School of Experience and Individual Initiative versus the School of Sublime Social Theories. The former wear the unromantic garb of gray facts and common sense. The latter are clothed in such colors as will catch the eye of all who are easily moved by emotion. What colors they are, too!

What tactics will be used in this next play is yet to be learned. Will it be a fake pass, the power football being hidden while a water feint is being made at one end? Will it be a drop kick, the football of power development to be tossed into the air for political winds to waft over the goal posts? Will it be an end run, seeking to escape the actual issue by some circumvention and break through for the touchdown so desired? One thing is sure. It will not be a straight line buck, hitting the facts squarely, for on such an attempt twice have the Theorists hit a stone wall.

It's a pretty fair game, and an interesting game, and all that, but isn't the cost of seeing it rather high, and are not the spectators becoming bored?

Consider the Architect
How He Buildeth

IT isn't enough to sell the electrical idea to the home-owner. He is already beginning to get used to it. One now must go back farther. It is he who builds the house who must be taught to incorporate in it electrical convenience, available in that house wherever the home-owner eventually may desire it. In the program of bringing home to building contractors the electrical idea, that too is being accomplished gradually.

But there is one step further that is important. He who designs the dwelling in the first place, the architect, must be taught to design it with electrical convenience in view. The architect, the first link in the chain, is an important link; exceedingly so since it is upon his judgment and designing that the succeeding work must be carried out.

The expressed intention of the electric cooking and heating committee of the Pacific Coast Electrical Association's Commercial Section is an excellent one. It contemplates making contact with architects and consulting engineers with a view to the designing of homes with wiring adequate to accommodate electric ranges if they are desired by the future tenant, at no undue cost of installation or bother. Architects and consulting engineers are to be invited to become members of this committee to that end.

One enlightened architect and engineer in southern California is himself building an all-electric apartment building, upon the operation of which he hopes to make a study of the comparative economies of electrical versus other means of heating, cooking, and operation in general. Co-operation with this particular architect, it was announced by the committee chairman, is contemplated by the cooking and heating committee, to the end that the results of his study may be broadcast to other architects and builders.

It is always wise to begin at the source if one is to modify the course of any stream, be it aqueous or otherwise. And while, of course, the ultimate consumer, the home-owner in other words, is the primary source from which the need for new buildings originates, he usually turns over to his architect, engineer or builder the provision of those things which will add to his comfort or convenience. Therefore, it is most important that the architect, the designer, and therefore the actual source, be reached first in presenting the electrical idea. That he is to be invited to sit in with the cooking and heating men in the sessions of their committee work is an indication that his co-operation will be invited along still other lines in which his work and that of the electrical industry intermesh.

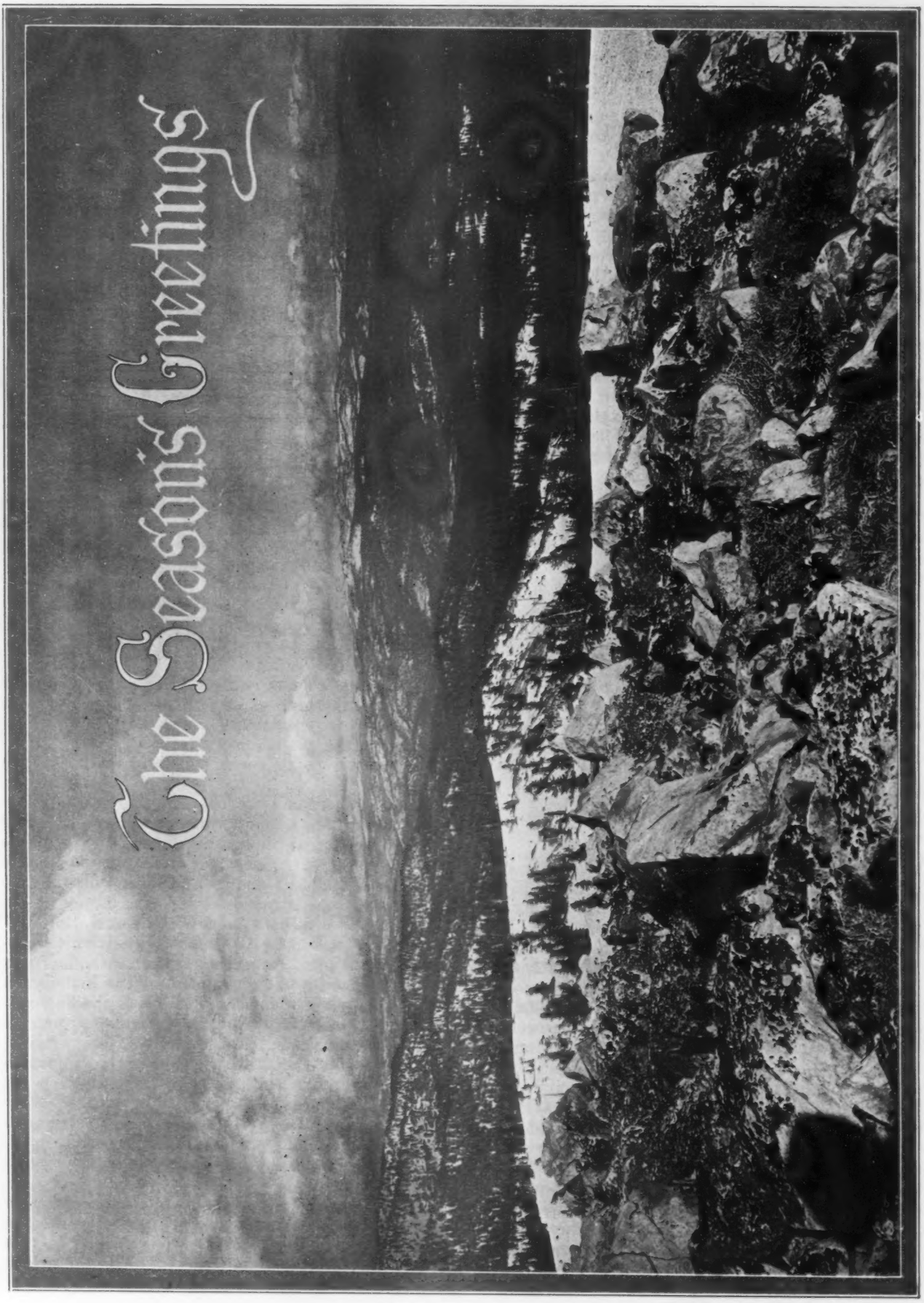
Would You Recommend
a Home Without Faucets?

HAS the contractor a proper conception of the importance of his position in the scheme of utilization of electricity to the point where it will perform the greatest good for the greatest number of people? Too often, we are afraid, he sees his job as merely the placing of a few wires and the hanging of a few fixtures at a profit to himself—and sometimes at a very slim profit. His obligation to the industry and the public as the most important link in the chain of complete utilization and full enjoyment of the comfort and conveniences of electricity recently was set forth by A. K. Baylor, vice-president of the General Electric Company, in one of his public utterances. Mr. Baylor said:

"The contractor is entitled to the fullest support and encouragement so long as he appreciates that he is in his operations—particularly wiring—an agency of the power company.

"He takes, so to speak, the hosepipe from the reservoir of power to the point of its application and the obligation rests upon him to see that the work is safe and sound; that circuit capacities and outlets are ample and that unnecessary expense does not retard extensions of electrical service. Architects, builders and the public are coming to understand that suitable wiring is as necessary an element in the modern household as a heating system or water supply, but too often wiring is purchased on a price basis, and cost, rather than serviceability, is the deciding factor. The installation is then adjusted to the low price and the channels without which the product of the power company cannot be marketed, are restricted, clogged and throttled. On the other hand, costly elaboration may be overdone and, unfortunately, there is no national standard to balance this against safety and adequacy. The avoidance of either extreme is largely in the hands of the contractor—and in maintaining the balance he is the direct emissary of the power company."

In his dealings with the public the contractor must realize that not only the reputation of the power company but of the whole industry is at stake. For every job he takes he holds the golden key to electrical comfort and convenience.


The Season's Greetings

The Hydroelectric Power Situation in the West*

By John B. Miller
President, Southern California Edison Company, Los Angeles

IT is only a few decades since the railroads of the United States formed the great pool into which the capital of the country, as well as a large part of that of some of the European countries, found productive employment. More recently the public utilities and particularly the electric utilities of the United States, by the rapid extension of service to an ever-increasing population, to a large extent have taken the place of the railroads in the matter of financial requirements. The present enormous demand on the electric utilities for enlargement of facilities and extension of service shows that this tendency is still a long distance from having reached its maximum. It has become increasingly important to those responsible for the securing and expending of electric-utility capital that all possible safeguards should be thrown around electric-utility investments in order that not only will the investments themselves remain intact but that their reproductive character shall continue and that the highest extent and quality of service shall be furnished to the power-using public.

JOHN B. MILLER

In studying the history of the railroads it is seen that in spite of their enormous service to the country they owe their present condition to unreasonable political control. In the past dissatisfaction was converted into political capital by those seeking public office under the guise of protecting the public and curing the railroads of their illnesses. Only the patient's exceptional vitality kept the cure from being fatal.

There is a tendency now to attempt to make a political issue out of the fact that electric utilities have become of great magnitude and are vital to American community life.

So many men were swept into public office on the wave of more or less maufactured hostility to the railroads and to some other large industrial corporations that many of those now seeking public office are attempting to use the electric industry for the same purpose.

Two methods have been employed to exercise political pressure on the electric utilities. The first, commission regulation, has been worked out to the benefit of both the utility and to the public, much to the surprise of many of those responsible for it. The second, however, is more serious. It is the continuing effort on the part of certain organized political bodies to take over the electric utilities and operate them on a political basis rather than on a business basis.

This phase of the situation must be squarely met and dealt with. It must be determined whether business enterprise or political manipulation furnishes the best channels for providing the public with its necessary daily kilowatts, or if some part of the service can be furnished by public enterprise and another part by private enterprise, to determine how far each should go.

When the early electrical manufacturing companies had developed at great expense and risk to themselves systems of electrical generation and distribution suitable for the use of the general public, almost their first sales effort was to impress on municipal boards and councils the advantages of electric lights, first for street lighting and later for business and domestic illumination. Every town that could be induced to install electric lights was canvassed, and plants sprang up all over the country. These plants were of small size. For a time a dynamo that would supply 1,000 incandescent lamps was considered an enormous machine. These were outgrown rapidly due to the popularity of the new system of lighting.

Since the growth of business proved to be a serious matter to the municipalities, whose financial plan was necessarily limited of scope, and cumbersome, the tendency was to load up the plant to its limit of capacity and discourage further extension of business.

* Address before midyear meeting of Western Division, Chamber of Commerce of the United States, Seattle, Dec. 7, 1925

On the other hand, it was found that in those communities where the electric system was in the hands of business men rather than of town and city officials the growth of the business was much more rapid. Capital flowed more freely into the business enterprise and, with improvements in the art, the older plants were retired rapidly and newer plants of higher effectiveness and greater economy were built.

As improvements in the art continued, improved apparatus and equipment made it possible to transmit electricity to greater and greater distances, until it was found that several communities could be served more cheaply from a central installation than they could serve themselves from individual plants.

After the success of long-distance transmission had been demonstrated, it was found possible to use the power of remote and previously valueless water powers for supplying towns and groups of towns and that this procedure could be carried on only in the hands of business enterprise, since the activities of the municipalities were necessarily restricted to expenditures that could be made in or close to their own boundaries.

Many of the earlier municipal plants were sold to the growing business organizations in the interest of economy, flexibility of operation and of easier and more adequate methods of financing. Some of the others continued to operate their plants, supplying part of the business of their territory while the commercial plants supplied the remainder. Others (particularly those which had built up adequate distributing systems) found that they made sufficient savings by buying power from the commercial companies instead of operating and extending their own generating plants, and have continued so doing. The greater number of the so-called municipal plants west of the Rocky Mountains operate now in this way.

The City of Los Angeles finds itself in the position of a city owning a distribution system covering **part** only of the city's area and supplied partly from its own power plants and partly from purchases from a commercial company.

In the Northwest the cities of Seattle and Tacoma have the largest municipal electric systems serving only a part, and in San Francisco a municipal water-power plant is delivering its output through the agency of the local companies.

The fact that municipal ownership and political control obtains to some extent in the four large West Coast cities would indicate a wide adoption of the principle, until the relative sizes of these installations is noted. Out of the total **installed horsepower** of generating plants, both commercial and municipal, the proportions are as follows:

	Horsepower
Los Angeles, San Francisco, Seattle, Tacoma	396,000
Other municipalities in the West	39,000
Total municipalities	435,000
Total commercial	4,035,000
Grand Total	4,470,000

It is seen, therefore, that political enterprise is responsible for slightly less than 10 per cent of the electrical developments of the West and that in the situation where it is most strongly entrenched its service is of a fragmentary and limited character. On closer analysis it can be shown that the whole tendency of the political-utility movement has been to take on as much of the **cream** of the business as possible to make a good showing and to avoid everywhere the **skim milk.**

The power problem, however, is not merely, or even primarily, the development of water power or the building of steam power or transmission lines or distribution systems. It is rather the building up of consuming loads which shall utilize, with economical efficiency, a steady co-ordinate development of all these things. The power **plant** does not create business. The power **system** makes the business possible, and the business makes the new plants and lines possible. Sketchy, fragmentary and local building of plants and lines to supply the local business of particular cities is uneconomic. Lean territories, as well as fat ones, must be given electric service if Western prosperity is to be broadened and general. Both the lean and the fat gain by this policy. The opposite policy means congestion in great population centers, and hardship in the rural districts, hardship for the farmer.

We look back over the entire history of government ownership in vain for any instance where any municipality or political subdivision, or any state, ever made one single major advance in the art of production, distribution and sale of electricity. Out of utilities in the corporate form and out of the manufacture of electrical machinery has come every important improvement. The original 110-volt direct current system; the "Edison three-wire system," the use of alternating current; the beginning of transmission at voltages that now look low; the successive steps from 10,000 volts to 30,000, 60,000, 110,000, 150,000, 220,000; the constantly increasing transmission distances; the improvement in the technique of distribution systems—each and every one came out of private initiative. Not one came from government, although city-owned electric systems started even with corporate utilities.

Every notable government-owned electric enterprise is a copy of what individual initiative, working under corporate form, has done somewhere else. Ruskin, I think it was, who said when he saw a dog walk on his hind legs, that the wonder was, not that the dog walked so well, but that he did it at all. The dog was only copying, rather badly, what men had done.

Are we then at the end of electrical progress? Shall we be satisfied only to have the old things done over and over as they are being done now, perhaps a little bigger, but the same old things? Not a man would agree to this.

Herbert Hoover, Secretary of Commerce, in his radio address of Sept. 29, 1924, said:

> "America has made the most marvelous advance in the history of man in the technology and administration of transportation and applied electricity. Can anyone believe that this invention, this courage, this application, this stimulation to genius that our nation has

brought forth would ever have been developed under a board of directors of 530 members of Congress and hundreds of members of the state legislatures? Government utilities in other parts of the world got their technology from us. So far as I am aware, no single vital invention has ever come out of government-owned utilities."

So much for service. If you want service above all, you must not experiment with government ownership. Let us now consider the minor question of cost. Cost is wholly subordinate, yet government ownership shows no advantage even in the matter of cost; rather, when all factors are fairly included, cost is greater under government ownership.

Cost

The main claim of government-ownership advocates is that government can secure capital at a lower price than can corporate utilities; therefore, government can give lower prices for service. This claim is true only in a very narrow sense. In America the differential between cost of capital to a municipality and cost of capital to a sound corporation is today principally **taxes.** This is no saving at all. It is of no advantage to the citizen to pay part of the cost of the capital that serves him, by making up out of his own pocket the loss on the tax-free securities that government would issue.

Another claimed saving is that the lands, buildings and machinery bought with tax-exempt securities would be free of local taxes. This claim is equally without merit. Of course there is this double tax-exemption on government-owned enterprises. The bond dollar is tax-exempt as to income taxes. The dollar's worth of machinery bought with the bond dollar is tax-exempt as to property taxes. But even if there were ten tax exemptions, these would not constitute real "saving."

A third factor enters on the other side of the comparison. This factor is of great importance. Capital can be put into a public-utility enterprise only in case somebody, somewhere, has saved his capital by spending less than he received. Capital constantly is needed for all sorts of permanent improvement, both public and private. Each item of that capital must come out of the common pool, the total of individual savings over expenses for that **particular year.**

When government dips into a common pool, no matter what rate government may pay for the capital that it takes out, just that much less capital remains for others to get. Those others then—all the rest of the people—must pay higher rates.

No harm would come if government—taking capital out of the common pool—were to take it on the same terms as all others and were to take only for its real needs, but politicians never limit their borrowings to essentials; they never take capital except under the artificial advantage of tax exemptions. Thus, as governments enlarge their functions, our taxes climb and the cost of living goes up.

Effect on Democracy

I have said that service is the all-important thing, and so it is, if we consider business alone. When we come to consider the reaction on government itself, we find a factor of such importance that it puts both cost and service into the background. This cannot be too highly emphasized. I refer to the domination of government by its nominal creature; to the building up of a bureaucracy, and, thereafter, controlling the sources of public information; presenting its propaganda unopposed; marshalling its subordinates into a political machine; controlling elections and virtually (though sometimes surreptitiously) abolishing democracy. The process is exemplified by the political history of Ontario, Canada, under its Hydro-Electric Power Commission. The same circumstances are bringing a like result in our own city of Los Angeles. It is a real peril that threatens our democracy today.

My own company made applications in 1920 and 1921 for permits to develop Colorado River power, promising to spend at the rate of thirty millions a year. Government-ownership advocates took the field and so far have succeeded in delaying the permits. Except for this, the Colorado River now would be at work serving humanity. The politicians have prevented the people from getting that service. On the other hand, the politicians talk, talk, talk.

Mormon Hospital Is Electrified

AN interesting example of the efficiency of electric cooking in a hospital is afforded by the complete electric kitchen recently installed at the Latter Day Saints' Hospital in Salt Lake City by the Utah Power & Light Company. The new installation consists of a multiple-deck baking and roasting oven, two ranges, one two-deck 120-loaf oven (sectional type) and one toaster. With this new Edison equipment the Latter Day Saints' Hospital, which is one of the largest in the West, is said to be the peer of any similar institution in the United States, and is one of the five hospitals so equipped in the West.

The two-deck oven has a capacity of 1,500 loaves of bread every eight hours, or 72 pies at a baking. The roasting oven will roast 300 lb. of meat at one time. The two ranges, of the hotel type, each have four burners 8 x 20 in., and the toaster is capable of toasting 400 slices per hour.

In addition to the new equipment, electric machinery already on the premises included two ice-cream freezers, hot plates on all floors of the hospital, dishwasher, meat choppers, potato peeler, refrigerator, and other smaller appliances.

The institution now has a connected load of 67 kw., with a demand of approximately 43 kw. The equipment now installed provides a capacity of 1,800 to 2,000 meals per day. At the present time about 1,300 meals per day are being served.

The management of the hospital is extremely well pleased with the results obtained from the new equipment.

Hydroelectric Power in the Pacific Northwest*

By O. B. Coldwell

Vice-President and General Manager, Portland Electric Power Company, Portland

WITH eight per cent of the land area, the states of Oregon, Washington and Idaho have approximately 30 per cent of the potential water power of the country. Some of the power sites are among the largest in the world. To date the utilities in this section have developed smaller water powers and have kept pace with the demands of industry. When conditions warrant, the public will find the utilities ready to supply their needs through the development of the greater power sites.

ONE of the great natural assets of the Northwest is its water power. Several reasons arising out of climatic and topographic conditions assist in making this region exceptional in this respect. One of these is that the descent from the Continental Divide to the Pacific is much more abrupt than is the descent to the Atlantic. Another factor is that the average rainfall is greater for the Pacific slope than for the regions lying to the east. The average rainfall in this vicinity is between 45 and 50 in., but in the mountainous regions where the streams rise the precipitation is much greater. With 8 per cent of the land surface of the United States, Washington, Oregon and Idaho have 30 per cent of the potential water power of the country. If we include the states of Montana and Utah, we have 16 per cent of the area and nearly 50 per cent of the potential water-power resources. If we take the eleven Pacific and Rocky Mountain states, we have 40 per cent of the area and over 65 per cent of the water power. The state of Washington has, according to the latest available statistics, a total of 4,970,000 potential horsepower of water power more than any other state of the Union, with a total of 560,693 hp., a little over 10 per cent, developed.

At this point it must be remarked that when the time for actual development is at hand a certain percentage of the water power listed will be found impracticable of development because of prohibitive costs. Just what this percentage will be is impossible to state.

This development of water power has taken place as part of a natural economic development of the territory. The electric utility company which has been in the forefront has kept apace with the growth of the industry and always has been ready to handle the increased growth in load. The financing of these developments has presented a weighty problem to the industry which, during the course of recent years, has been assisted greatly by the sale of the stock of the utility to its customers. This has come about through a gradual improvement in the relations between the public utilities and the public and by a more intelligent understanding of the problems of the utilities by the man in the street.

There are in the Northwest, in Washington and Oregon, on the major streams, especially the Columbia River, a number of very large power possibilities, such as those at Priest Rapids, Umatilla Rapids, and Celilo Falls. The possible power at each of these sites runs into the hundred thousands of horsepower. Some day, when the industry of the commonwealth has developed to a point where this power may be absorbed, these will play an important part as additional sources of power. For the present, water powers of more moderate size, of which there are yet many, will be the ones to be developed. In practically all cases the water power to be had at a given site is a variable quantity, dependent upon the variation in stream flow as affected by the characteristics of the watershed. This makes it desirable and, in fact, necessary in many cases to develop artificial storage of waters if natural storage is not available. The creation of such storages involves heavy expense which adds to the average cost of power production but is a necessary adjunct in order to equalize the flow of the stream and insure a greater output during the low water season than would be possible normally. In many cases it is necessary further to supplement the water powers by means of stream relay plants which must be built and operated and the expense of which also adds to the average cost of power production.

The outstanding example of a power independent of shortages due to seasonal variations in stream flow is that at Niagara. Here the Great Lakes form a natural reservoir which maintains at all times a constant flow of water.

In localities such as the Northwest where there is a substantial amount of undeveloped water power there is constantly being spread harmful propaganda concerning the cost of water power. It is freely asserted that water power, God-given as it is,

* Excerpts from a paper before the midwinter meeting of the Western Division of the Chamber of Commerce of the United States, Seattle, Wash., Dec. 7, 1925.

is the cheapest form of energy and that the development of the larger units of water power yet available under public ownership is at once necessary in order to bring into the community industries on a large scale and thereby upbuild the state. It is the common practice of advocates of government ownership of water-power developments to present estimates of cost of producing power at the power plant as the price at which power may be obtained at the customer's premises. Nothing could be more misleading to the prospective customer than such estimates. The direct operating cost of a modern hydroelectric plant is trifling. The principal item of cost of energy obtained from the hydroelectric development is interest on the money invested in the development. There is a vast difference between the cost of a kilowatt-hour of electric energy on the busbars at the hydroelectric plant and the cost of that kilowatt-hour when it finally reaches the ultimate consumer's meter. For every dollar invested in the generation end of the business, at least another dollar and a half is invested in transmission and distribution lines, substations and utilization apparatus. The largest portion of labor employed by the electric utility is employed after the energy leaves the generating plant.

No one in the business of developing and utilizing water power has any thought of disparaging the merits of water-power development along economic lines, but the idea that the development of one or more of these major powers would result in power being made available so much cheaper than it is now to be had that it would bring in to these regions an influx of industry must be refuted.

In a survey of 275,000 industrial concerns operating in various parts of the United States, the United States Census Bureau has determined that, of the cost of the finished product of these plants, 2.8 per cent is assignable to the mechanical power and heat used. Other considerations, such as markets, the cost of raw materials, transportation, taxes, and labor, are the determining factors in the location of an industry. Throughout the West power rates are much below the average of power rates of the country and in all places are low enough so that any difference in the power rates of two different points is not of sufficient importance to have anything to do with the location of an industry:

Wherever a plentiful supply of cheap fuel from reliable sources is to be had, as is the case in many parts of the United States, even in some sections here in the Northwest, there will be a careful analysis of cost made before power is developed and when it is can be shown that the cost of electric energy is cheaper if developed by steam power, it is certain the steam method will be used.

In cities and towns electric service is almost universally available; not so in country sections. Of the 500,000 farms in the United States, about 8 per cent enjoy electric service. In some sections much has been done already in providing service lines for the farmer, but this is where a large number of small-sized farms are grouped together. It is the exception, however. Distances are great and the load to be had is meagre. This is one of the present problems of the utilities and much thought and attention are being devoted to it. At the present time there is a co-operative study going forward in which participation is being had by the Farmers' Co-operative Association, Agricultural Colleges, the electrical manufacturers, and the public-utility companies. It is expected that new type of apparatus especially suited for conditions on the farm will be developed in the course of a few years that should assist greatly in the upbuilding of electric load on the farm, thus simplifying the problem of meeting the cost of the extension.

A subject about which there is much confusion in the mind of the public is that of so-called "superpower," to the application of which much merit is attached. It is merely interconnection of electric systems that for some years past has been gradually taking place and will be more in evidence as time goes on. These interconnections between large electric systems allow of surplus power being shifted and passed on from one system to another. Thus when a shortage of water is affecting a system in one locality, it is possible for it to receive aid from a system in another locality where the water conditions are such as to give excess power for the time being. In the southeastern sections of this country there have been very large interchanges of power during the past year through the medium of interconnection. Our systems here in the West now are connected up in such a way that it is possible to shift power from this region along existing transmission interconnections so that California at times may receive the benefits of some of the surplus of the Pacific Northwest.

In conclusion it may be said that the potential water power of the nation is being developed as rapidly as uses for the energy are found, and where water power is available it is being and will continue to be developed in preference to steam in all cases where the cost of energy so produced by water power is more economical.

California Electric Dredges for Russia

THE progress of electrification in Russia is indicated by the fact that the Yuba Manufacturing Company of San Francisco is building at its Marysville works five electrically operated mining dredges for service in the Ural Mountains in Russia. These dredges are to be used mining platinum and will be operated by the Platinum Trust of the Soviet Government.

Four of the dredges have a capacity of 13½ cu. ft. and one a capacity of 7½ cu. ft. The complete electrical equipment of motors, control and lighting service is being furnished by the General Electric Company, and the power for operating will be obtained from local transmission systems.

A commission from the Soviet Government visited the United States early in 1925 to inspect the operation of placer-mining dredges and, after a thorough investigation of designs and operating characteristics, selected designs of dredge equipment such as have been in operation in California for a number of years.

The Secret of Selling

An Interview with a Successful Woman Salesman, Who Tells How She Makes Friends and Customers at the Same Time

By Clotilde Grunsky

FOR the graces of life we look naturally to woman. For finesse in the elusive arts of salesmanship then and for an appreciation of those finer shades which leave in the customer of electrical goods a feeling that "this is a real place to do business with", we may look to a woman. In this article a successful woman salesman of electrical appliances describes modestly those little touches which go into making sales an art rather than merely a business, with correspondingly favorable results to the store in its standing in the community.

"THE secret of selling electrical goods," said Mrs. V. M. Salmon, "is to give the customer not what she asks for but what she really wants." This seemed to express a new idea, new, yet ringing true enough to demand some thought as to what it really might mean. Perhaps, too, she might be led to discuss more of the secrets of selling, for Mrs. Salmon, if anyone, could give an insight into them. She is a woman who has been eminently successful in the sale of electrical appliances, even though she has not been in the electrical business on her own capital, preferring to work for others so that she might be relieved of the burden of risk of the business, a burden which would act as an impediment to her sales efforts. But she has been store manager in more than one dealer's establishment in San Francisco, and always she has lifted the store with which she has been connected to the foremost rank in that district.

"Always find out what the customer wans to use the appliance for," went on Mrs. Salmon, "and then give her what will meet her needs. She is often asking for something which will not meet the requirement at all. One of the ways in which the electrical store loses out is to have an ignorant salesman sell equipment to a customer for which she may have asked but which later will not do the work. She does not blame her own judgment, but electricity, and then the store which sold her the appliance."

"That implies considerable knowledge of electric appliances and what they will do on the part of the salesman," she was told.

"Yes," said Mrs. Salmon, "there is no use anyone's taking up a business unless they really are interested in it and will make themselves masters of the material they work with. The successful electrical salesman should know not only what happens to be in the stock of the store he works for, how it is made, what it will do, but he should know what is on the market, so that he can either get the article for the customer or tell her why she does not want it. In any case, he must be in a position to give advice."

"But some people do not like to be given advice," it was suggested.

"They will accept your advice if they know what you are talking about. Rule one in any sale is to master your customer. If she is refractory and inclined to think that she knows more about a subject upon which she is obviously mistaken, it is worth while talking to her for a while to show her that you know what you are talking about. And provided, of course, that you really **do** know what you are talking about, she will recognize the worth of your suggestions and will thank you for your interest and advice before she goes out."

Take Your Own Medicine

"In this connection," went on Mrs. Salmon, "it pays always to carry only the best material in your store, so that you can honestly defend the article you are selling against what may be the customer's previous predilection. Use it in your home, too—and tell the customer about your experience with it in practice. And while you are about it, use the same article in your home that you sell in your store. It is not enough to use a washing machine or an electric iron—each should be of the make you are carrying and the one you recommend to your customer. You will know what you are talking about and your talk will have the ring of truth."

"Do you believe in carrying more than one make of any given article?" she was asked.

"That depends," said Mrs. Salmon. "In general, no. There are some appliances, like the electric iron, where there are distinctly different groups and it is well to carry one of each type. But the policy of any electric store is stronger if it will confine itself to one article in each line, selected because it seems the best. I don't believe in selecting or selling stock merely because it is easy to get rid of—easy sellers often lose friends for the store in the long run. If you will take trouble to put up the necessary sales argument you can sell the less popular make which you have selected because it better meets the customer's needs and as a result you will have a grateful and regular patron."

Have your goods segregated. When you are talking waffle irons, it is very distracting to have your customer's eye fall upon a new type of toaster and have her begin asking questions about that.

"Never sit down," is one of Mrs. Salmon's maxims—"or at least, never be discovered seated when the customer enters the store. Never wait at the counter until the customer walks the length of the store to find you. Walk forward and meet the customer at the door, walking back to that department in which the customer is interested. It may be that she will see something on the way in which she is interested—and you will be there to answer questions.

"Have your goods segregated so far as the space of your store layout will permit. When you are talking waffle irons to a customer, it is very distracting to have her eye fall upon a new type of toaster near by and to have her begin to ask questions about that. If there are two shopping together, it is particularly difficult to keep attention focused on the matter in hand unless other articles of possible interest are eliminated.

"When another customer comes in while you are waiting on the first and asks a question, answer courteously but briefly, first excusing yourself to the woman upon whom you already are waiting. Should the newcomer ask for further information, tell her courteously that you will be with her in a minute but that you are busy with another customer.

"Never sell the customer an article she doesn't want. She may buy because she feels obligated on account of the trouble to which she has put you, but it is far better to lose the sale completely than to let her go out with something which she is not convinced she needs."

Mrs. Salmon has an experience to illustrate every precept, and in this case tells how a customer who questioned her word as to an article nevertheless finally decided to take it. She got him to admit that he really didn't want it, whereupon she refused to sell it to him. He returned at a later date to tell her that he had found that she was correct—and placed an order five times the original one she had foregone.

"Is That All?"

"When the sale is completed," says Mrs. Salmon, "never say 'Is that all?' It implies that there is indeed nothing else wanted, and secondarily, it is discourteous, showing a lack of appreciation for what the customer already has purchased. 'Can't you do anything more than that?" is the implied paraphrase and it is not apt to create a pleasant feeling in the customer's mind. Thank the customer, ask her if she wishes anything more, and call her attention to something new which has just come in.

"In showing off new equipment which the customer has not asked to see, always remember that your time is worth something and let the customer feel that you are giving her something. If you make some such statement as, 'Would you like to see the new lamps that have just come in? I am free right now and have time to show them to you. I might be busy if you came in again,' you will find that the customer accepts with a sense of receiving rather than conferring a favor and will thank you for your courtesy and time at the conclusion.

"Walk with the customer to the door. It is an act of courtesy—and it gives a further opportunity to make a sale, should something further occur to the customer on the way.

"Let the customer know when you do things for her. If you have the article repolished before it is turned over to her, tell her about it. If you replace a screw free of charge in an appliance under repair, let her know that you have done it. She cannot appreciate your service unless she knows about it.

"Tell the purchaser how to take care of the equipment she buys. Vacuum-cleaner motors must be oiled as well as automobiles—and she will not consider the task formidable if she knows about it. In general if she will keep heating elements out of water and will keep her cords in repair, she will have no difficulty. It is well worth while telling her in advance that fumes from a gas stove will tarnish nickel-finished ware, so that if she has expensive appliances which are not in regular use she will keep them away from the gas stove, or wrap them in wax paper covered with newspaper if she cannot protect them otherwise. When tarnish has gone deep enough, it cannot be removed—and renickeling is a very expensive process, not calculated to encouage housewives in the way electrical.

"Give the customer freedom of the store. Someone always should be at hand in case questions are asked, but if the customer shows an inclination to look about without purchasing, do not force your

Give the customer the freedom of the store. If a customer shows a tendency to look about without purchasing, do not force your attentions. There are stores in which certain women will not trade because they are not allowed to look about for themselves, but are met immediately by a clerk who forces service upon them.

attentions. There are department stores in which certain women will not trade because they are not allowed to look about for themselves, but are met immediately by a clerk who forces service upon them.

"Bring the customer to the back of the store, if possible. If the article purchased is in the front of the store, show her something in the rear, if you can. So arrange the store that the articles most called for are well back within the selling space.

"Be more particular about the shopper who doesn't buy than one who does. The woman or man who makes a purchase has carried something away with her which, if you have sold wisely, will continue to make friendships for your store. But the woman who doesn't buy has only the memory of your words and the type of service she received. And yet she is as great a potential purchaser so far as the future is concerned as the other. Be sure to make her a friend."

"All this is about how to treat people after they are in your store," said the interviewer, "but how about getting them there in the first place?"

"The backbone of any business is the regular customer who comes in because she likes the type of your service and trusts your advice," said Mrs. Salmon. "Then, of course, there are the friends of your regular customers to whom the word has been passed along. But in bringing new people into your store, location plays the most important part."

"What is the best location for an electrical store?" the interviewer asked, not really expecting an answer. But Mrs. Salmon had one.

"In the apartment house district," said she. "Not only are there more inhabitants to the square inch in such a neighborhood, but there are more people who get their own breakfasts without proper kitchen equipment, and for whom the electrical table conveniences are almost essential. Moreover, the combination of an electric bill paid by the landlord, plus insufficient heat furnished by the janitor makes an excellent market for the small electric heater."

"Never locate an electric store next to a motion picture theater," she went on, shattering a popular fallacy. "Just watch the people who come out of the theater any evening. They are absorbed in what they have just seen and are either talking about the picture, or their heads are in the clouds until they come to the first curbstone which brings them to themselves because of the necessity of crossing the street."

"Good window displays, windows with color and with motion in them are business getters," said she. "And here's an idea I have wanted to try out; that is, to curve your window from the sidewalk into the front entrance. This means no angles to the glass or base, but an imperceptible curve which the passerby, interested in the window display unconsciously will tend to follow, until suddenly he finds himself at the door, which, if the climate permits, should be open, with an inviting interior to attract him further."

"Do you believe in sales?" was the next question.

"Not if the article which is reduced in price is alone considered," said Mrs. Salmon. "Sales are worth staging only if they are intended purely for the purpose of bringing people into the store in order to sell them something else. In that case the article offered should be a real bargain, and the aim of the store salesman should be to sell at least one other item to every purchaser. Such a sale of curling irons was made most successful by asking each customer if she had any provision for using the iron other than the ordinary light socket. Many double sockets were sold in this way, not to mention the developing of one or two prospects for wiring. With special effort, attention can be diverted to other equipment and often very satisfactory orders built up from customers who came in merely to follow up the advertisement of a sale."

"Nor," said Mrs. Salmon, "do I believe in charge accounts or selling articles on the installment plan with the idea that the payment of bills will bring the customer into the store. So it will, but she won't buy anything while she is there. She is trying as hard as she can to get rid of a troublesome bill for electric goods already hanging over her head and she is not in a good frame of mind to make more purchases. The installment plan is inevitable in selling large appliances to a certain type of housewife, but from the dealer's standpoint it should be avoided in so far as possible.

"Service is a fine thing, but avoid so-called 'grief' work. It does not pay to expend time and effort in

endeavoring to match glassware or in soldering some equipment which inevitably must fall apart again soon. Nine chances out of ten the effort will be a failure—and in that case the customer will have no appreciation of the impossibility of the task, but will remember only that you were responsible for its not being accomplished. The right thing to do is to direct the inquirer to the manufacturer where she can find out for herself that the line of glassware has been discontinued. She then remembers your courtesy—and you are saved a profitless expenditure of time."

"The carrying of radio parts comes also under that head, when indulged in by the average dealer," according to Mrs. Salmon. "Most of these are purchased by small boys who come in with ten cents held in one hand and with all the flair of making an important purchase. They want explanations and attention, which, if you carry the goods, you must in all courtesy give. This takes your time from other customers and brings no adequate return either in itself or in future business."

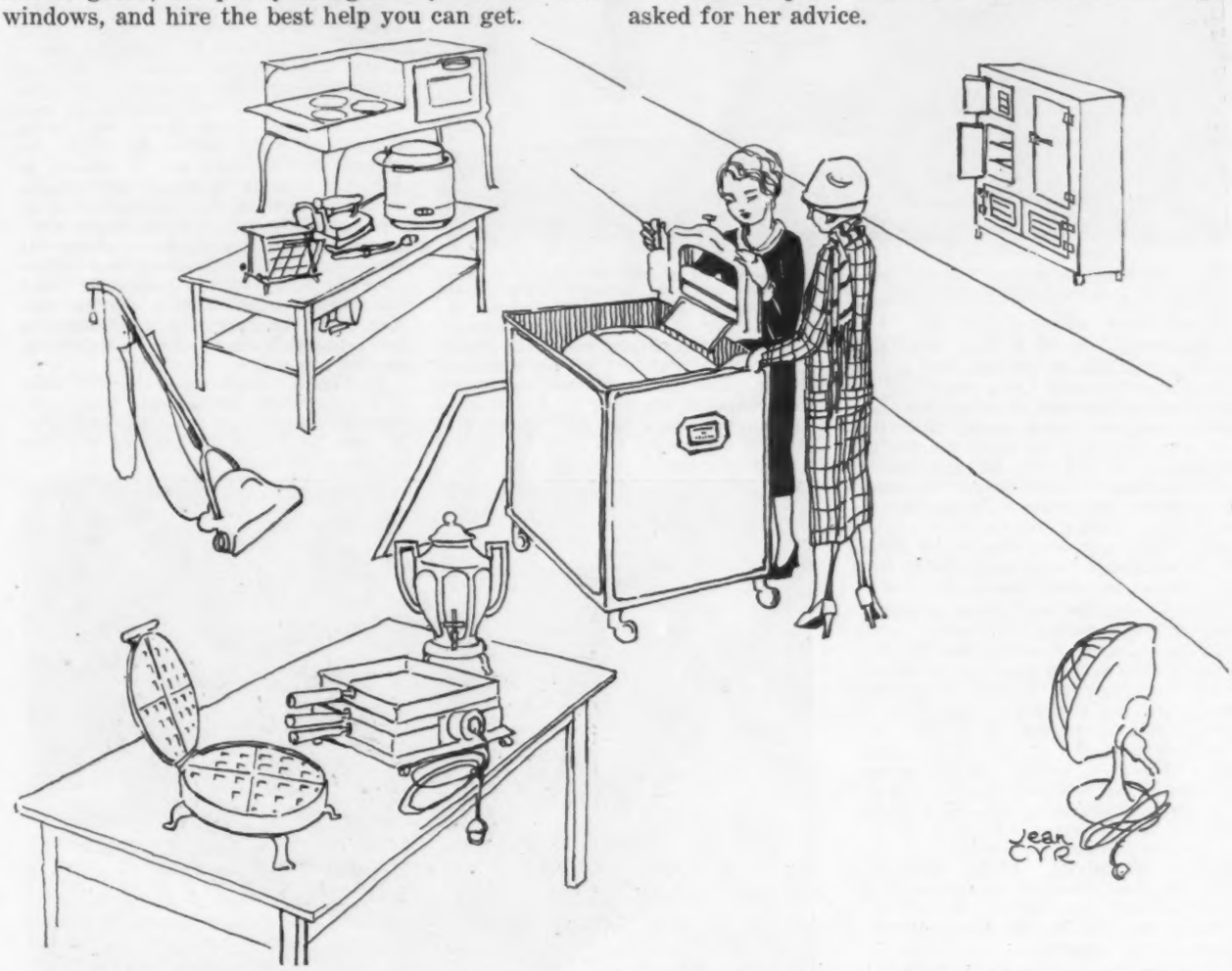
"After all," she suddenly summed up the entire conversation, "there are three major elements to making a success of any business—carry a good line of goods, use plenty of light in your store and windows, and hire the best help you can get.

"In regard to the line of goods you carry, by the way," said she, "I have found it advisable to carry a line which provides a service station for equipment somewhere at least in your section of the country. This means that repairs in equipment brought back can be made quickly, whereas otherwise it may mean three or more weeks for a very simple defect.

"As far as salesmen are concerned, it is a case of luck and good judgment and training. I believe in giving considerable personal attention to training new salesmen but not in oversystematizing the work. If there is too much red tape, no transaction ever is brought completely to a close, and there soon accumulates such debris of unfinished business that it is impossible to check up on mistakes until too late. It is far better to make each individual responsible for some one transaction from beginning to end, stimulating in him, if possible, a pride and an enthusiasm for his work.

"Personality and personal service are the basis for return trade—and return trade is the foundation stone of business success. My customers always say 'thank you' when they leave the store—and they usually come back again."

Which is quite true—and the reason she was asked for her advice.



—it is worth while talking to her for a while to show her that you know what you are talking about. And provided that you do know what you are talking about, she will recognize the worth of your suggestions and will thank you for your interest and advice before she goes out. . . . Tell the purchaser how to take care of the equipment she buys. She will not consider the task formidable if she knows about it.

CENTRAL STATION CONSTRUCTION OPERATION AND MAINTENANCE

External Heaters Used to Heat Powder Houses

Simple and Safe Devices for Maintaining Constant Temperature Assist Handling of Immense Amount of Explosive

By G. C. HECKMAN, Superintendent of Electrical Construction, Southern California Edison Company, Big Creek, Calif.

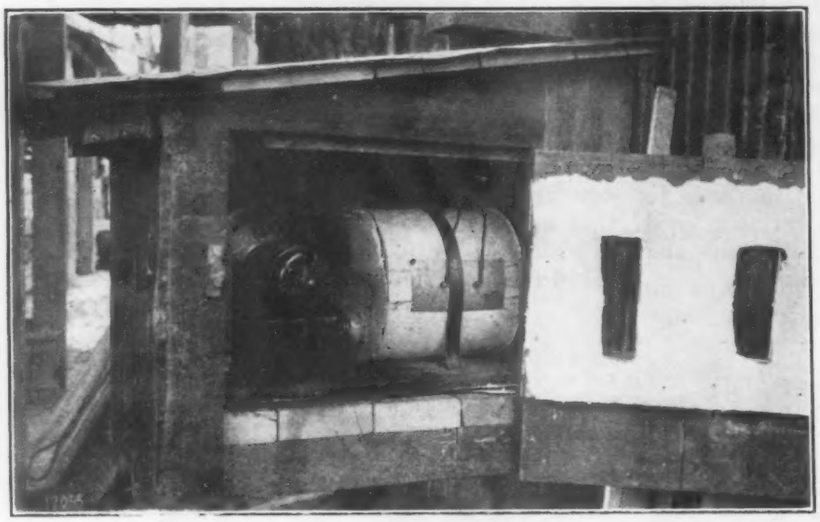


Fig. 1. Typical installation of automatically controlled heater for powder houses. Air is forced through the jacketed heater unit, through protecting screens and into the house through several feet of pipe

Explosives played a most important part in the tunnel construction on the Big Creek-Florence Lake project of the Southern California Edison Company. So great were the amounts used that the company was for many months the purchaser of the largest amounts of this material shipped to any indidividual concern excepting only the war department. Large quantities of powder and other explosives had to be stored at all camps, to be immediately at hand for the various tunnel headings.

Severe weather conditions made necessary some means of heating these powder storage houses and the handling houses as well. Of course fires of any kind were not to be considered and steam was not available. Therefore the choice fell to electric heat, not only from natural choice, but from necessity. However, it was considered unsafe to install any electric lamps, heaters or even wiring within the walls of any of these houses. Even with this safe form of energy there was the possibility of sparks. Light, therefore, was supplied from a reflectored lamp mounted on a pole several feet from a window and having its beam directed through the window.

Electric heaters were installed in small protecting structures adjacent to the powder houses as shown in Fig. 1. From these heaters warm air was forced into the powder houses by means of a small blower and the necessary air piping. The motor, blower and heater were mounted together as a unit on a common base as shown in Fig. 2. This assisted materially not only in the assembly of the equipment, but in the installation.

In the hot air pipe of each heater was installed an air strainer as shown in Figs. 2 and 3. This device was made up of several fine mesh screens or baffles arranged in a manner similar to that employed in the ordinary automobile muffler. This scheme prevented sparks and dust from passing into the powder house. Even without this spark arrester the possibility of sparks being blown into the houses through the hot air stream would have been remote. This device served as additional safety insurance and made the whole machine fool proof. The blower intake also is screened.

The temperature range under which explosives are most readily and satisfactorily handled is rather narrow. Therefore an automatic, thermostatically controlled device had to be rigged up that would have its operating mechanism inside of the house and its contacting mechanism outside of the house. The operation of both the heater element and the blower motor was to be controlled by this device. As finally designed this element was as shown in Fig. 4. As may be noted, the metallic operating coil of the thermostat is at one end of the long tube while the electrical contacts are at the other end of the tube. The visible shaft is a hollow tube through which is placed the solid rod which transmits the mechanical motion from the operating mechanism to the contacting mechanism by a turning motion.

In Fig. 5. is shown a close-up view of the operating mechanism. The screw immediately behind the operating coil is used to adjust the setting for the

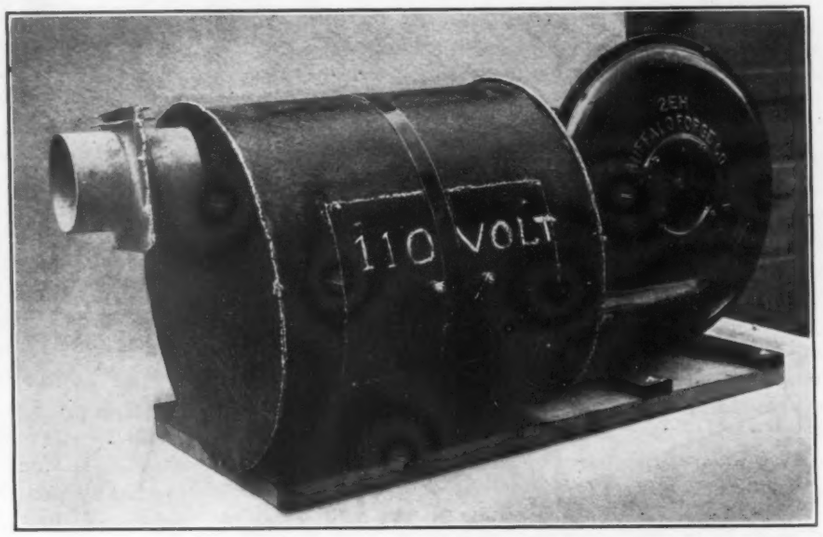


Fig. 2. Assembly of heater and blower on a common base. The heating units are mounted on the plate bearing the inscription "110 volt" and thus may be removed easily for cleaning or repair

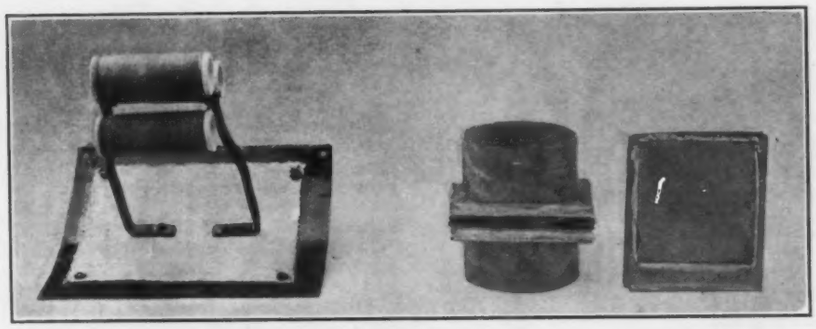


Fig. 3. An assembly of heater units (left) and the multi-screen air strainer (right). The screen arrangement in the air pipe permits easy cleaning of the screen.

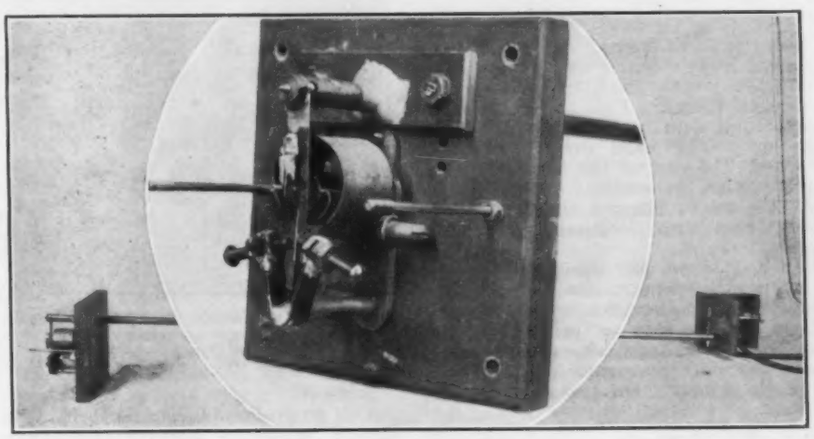


Fig. 4 and Fig. 5 (insert). Showing assembly details of the thermostat controlling mechanism. The actuator end (insert) is in the building and the contacts are outside.

temperature desired. Operation may be obtained within two or three degrees of the actual desired temperature. The two longer screws immediately in front of and below the operating coil are for finer adjustment. The distance between the points of these two screws corresponds to the distance between the contacts at the other end of the operating shaft. The amount which the soil can move is controlled by these two screws.

The motor and blower is a standard unit and the heater coils are standard 500-watt units. The number of units may thus be varied according to the volumetric capacity of the building to be heated. The other features of the equipment were built in the electrical department at the Big Creek headquarters.

Brief Discussion of Transformer Handling Layouts

Obsolete Railroad Turntable with but Slight Modifications Facilitates Transformer Transfer at Pit Three

By CLINTON DE WITT, Assistant Engineer, Department of Civil Engineering, Pacific Gas and Electric Company, San Francisco

High-voltage outdoor transformers of the present-day large-capacity electric station must be arranged for rapid and convenient handling when emergency repairs are required. Delay in getting transformers back into service may cost large sums of money.

It is economical practice to use the main station cranes for this repair work as their capacity usually is ample. The layout then must permit rapid movement of the transformers from their permanent position to a point inside the station where the cranes may reach them. There are several possigle designs which can be used in this connection.

Transformers usually are placed in a row parallel with the longitudinal axis of the station and the center line of the generating units. A transfer track runs parallel to this axis and is arranged so that a transfer car may be brought to any transformer position and the transformer rolled from its place onto the car. This practice is common in most layouts.

The transfer track may run to a junction with the main railroad spur entering the power house. However, this construction might require a great quantity of additional excavation if the station is located in steep country. As the loaded transfer car ordinarily cannot be moved by hand some means of power propulsion or at least handling by block and tackle will be required for the movement of the car. This usually entails pulling-piers for each stretch of track. Furthermore, the entire track must be absolutely level and therefore cannot be placed on soft ground without ballast. There are locations where this method may be the most desirable in spite of the drawbacks mentioned above.

Another design is to have a cross track entering the power house between crane columns. The cross track must be at the same elevation as the rails of the permanent transformer position and also the station floor. This means that the transfer track must be depressed the depth of the transfer car. As the transfer track usually must be crossed to reach the switch yard, this depression might be objectionable.

Fig. 1—Showing Pit 3 turntable during construction period and indicating transportation condition to be met.

The transfer track may be extended just beyond the station building and a raised cross track built between the transfer track and the main station spur. If this design is used, two transfer cars are required or the transfer track must be extended to join the main station spur.

A layout, which does not require the extension of the transfer track to a junction with the main station spur and which at the same time permits the transfer track to be at the station floor level, is one equipped with a

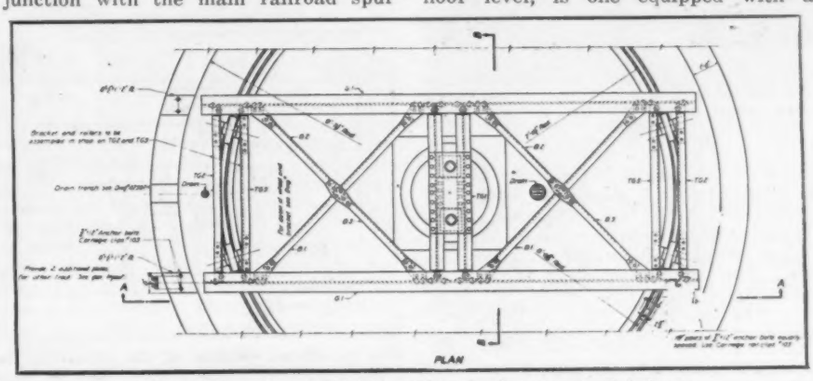


Fig. 2—Plan view of Pit 3 turntable showing structural features.

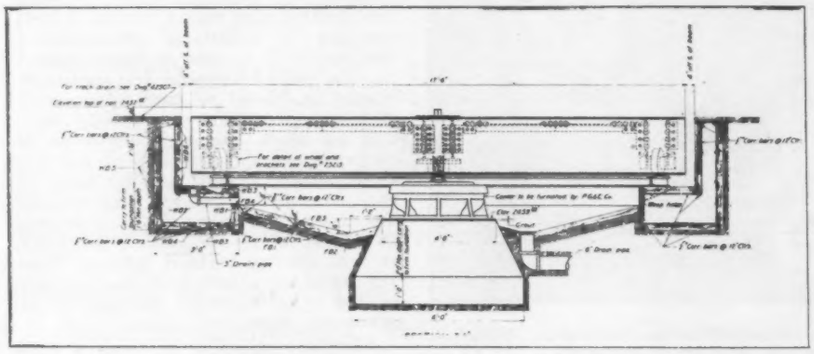


Fig. 3—Elevation of Pit 3 turntable installation.

turntable at a point on the transfer track which permits a cross track to enter the station between crane columns.

On the Pit 3 development of the Pacific Gas and Electric Company the latter design was used to advantage. It is interesting in this connection to note that the turntable base castings and rollers originally were used in a 65-ft. railroad turntable manufactured in 1902 and now obsolete for that service. As the loaded transfer car at this plant weighs approximately 130,000 lb. and the maximum weight for which the original turntable was designed was 175,000 lb., the parts were quite close to the required capacity. A pair of 24-in. I-beams 17 ft. 6 in. long braced at the center and at each end and fitted with small end rollers provides the deck. Figs. 2 and 3 show structural details. This turntable may be moved by hand even when fully loaded. The cost of the turntable complete with foundation was between $1,000 and $1,500 and was by far the most economical solution to the problem.

Fig. 1 shows the turntable in place during the construction period. An electric car-puller with vertical niggerhead may be seen to the right of the table. This controls both runs of track and has more than paid for itself during the construction period alone.

Power Company Communication Systems — II (b)

Dispatchers' Board and Office Exchange Interconnected to Reduce Attendance and Provide Flexibility

By H. N. KALB*, Telephone Engineer, San Joaquin Light & Power Corporation, Fresno, Calif.

Fig. 15 shows the San Joaquin dispatcher's switchboard. This board has twenty line positions and three keys and two lights for each line. One light is white and simply indicates ringing signals on the line. The large white light near the top center of the board is the code pilot and flashes the code signal. Each line is equipped with a small buzzer which gives an audible code signal along with the code pilot light. The red light above the white line lamp is the busy signal. A busy signal shows on both the dispatcher's and the telephone operator's board when either the dispatcher or the telephone operator is using the line. The top row of keys is used to disconnect the audible signal or buzzer. The two lower rows of keys provide four buses on which the dispatcher may talk or on which he may connect any two or more lines through his board, thus doing away with the use of cords. The dispatcher's phone is attached to the keys at the extreme right and the top key of this position is used as a ringing key.

The dispatcher's phone is of the No. 2 foot-switch type Wonderphone. This consists of a standard adjustable-diaphragm receiver with a horn and a large transmitter equipped with two buttons. Normally the receiver is on the line and the transmitter circuit is open as soon as the dispatcher throws his line key. When he wishes to talk the depression of a foot switch under his desk opens the receiver circuit and closes the transmitter circuit. This arrangement gives the dispatcher the when the code signal comes in. All cords on this board are universal cords (Fig. 18) so that any one may be used most transmission from his equipment and leaves both hands free for writing.

Fig. 16 shows the telephone operator's room. At the left is the switchboard to which is connected all the private telephone lines of the power company. This is a Kellogg, toll-type, two-position board and has a capacity of 300 common-battery lines, forty toll lines and ten trunks. All lines are equipped with a white line lamp and a red busy lamp. The toll lines or long private lines are multiplied on this and the dispatcher's boards. However, on the telephone operator's board only one buzzer is used and that is in multiple with the code pilot light and operates from all long lines.

A circuit diagram of the long or toll-line terminal equipment is shown in Fig. 17. The solenoid relays are set so that they hold the white line lamp energized for about eighteen seconds. Thus the telephone operator or dispatcher will have ample time to locate

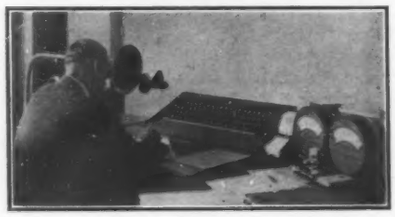


Fig. 15—Telephone equipment of the San Joaquin load dispatcher showing the Wonderphone which leaves both hands free during conversation.

Fig. 16—Office exchange of the San Joaquin Light & Power Corporation showing the two-position Kellogg toll-type private board and the Bell System private branch exchange.

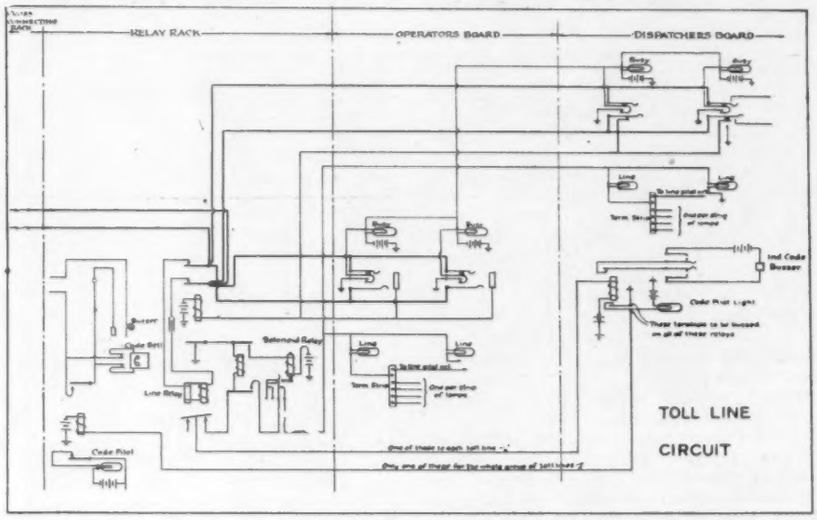


Fig. 17—Circuit diagram of the private-line terminal equipment indicating the interconnection with the dispatcher's board.

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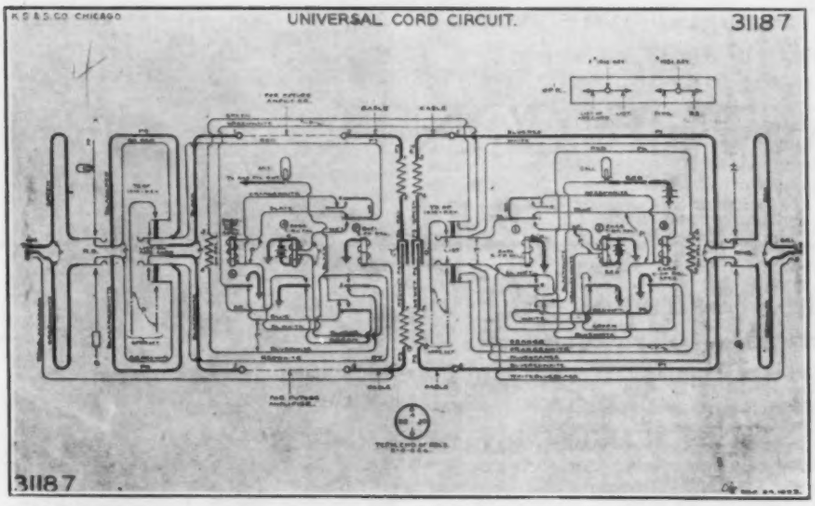


Fig. 18—Universal cord circuit used on the private-line board.

the line on which the call is being made, even though they may be busy when the code signal comes in. All cords on this board are universal cords (Fig. 18) so that any one may be used rigid in the plane transverse to the to connect local battery lines to other lines, either local or common battery, in any desired combination.

One unique feature of this board is the equipment used in each operator's circuit. Those who have used power company telephone lines very much undoubtedly have had the experience of receiving acoustic shocks due to having the receiver to their ear when some transmission line went down or some bad case of power trouble occurred. To provide against any such trouble to the telephone operators, the operator's circuit in each position is equipped with an "acoustic shock absorber" whichh effectively prevents any uncomfortable power impulses from reaching the operator's head set.

The calculagraph is used for recording all out-of-town calls. Tickets (Fig. 19) similar to regular toll tickets are used, and they form a ready indication of the amount of traffic handled each day, week or month. Tickets are numbered consecutively for each day. These are filed away and can be referred to for any study of a line that may become overloaded with business. When a line becomes so congested that it seems busy most of the time a count of all calls and their duration is made for several days. From information so obtained a remedy generally can be determined upon. In connection with the operation of a switchboard of this class it is well to count all calls of different classes at least twice a year for a period of one week in order that some idea may be had as to the work being performed not only by the equipment but also by the operators.

On the installation pictured herewith four women operators are employed on the private and Bell System boards between the hours of 7 a.m. and 7 p.m. Two boys operate from 7 p.m. to 12 midnight. Between 12 and 7 a.m. so few calls are received that all Bell System calls are handled by night connections to one of the substations and the dispatcher takes all private line calls. This provides for the operation of an adequate communication system for a power company, prvided the system is maintained properly.

Editor's Note: This is the concluding half of the second of a series of three articles by Mr. Kalb. The third will deal with maintenance problems and will appear in an early issue.

San Joaquin Light & Power Corp'n. Private Line

TELEPHONE CALL RECORD

No. .....

Date .....

Operator .....

From .....

At .....

To .....

At .....

Delay:

Hr.....Min.....Sec.....

Elapsed Time:

Min.....Sec.....

.....

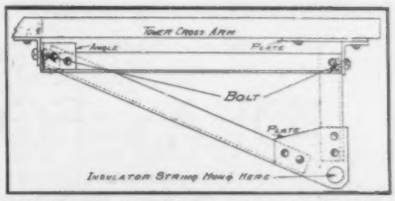
Fig. 19—Toll-call ticket form used for all out-of-town calls on company lines to keep track of traffic densities.

Crossarm Brackets Effect 30 Per Cent Insulator Saving

By W. C. FOSTER, Assistant Operating Engineer, Portland Electric Power Company, Portland, Ore.

An interesting detail in connection with the Oak Grove transmission line of the Portland Electric Power Company is the use of special angle brackets on corner towers. Usually corners require special dead-end construction in order to provide the necessary clearance between conductors and towers. The use of the brackets as shown in the accompanying illustration obviates the necessity of any other special construction.

These brackets are pivoted to the



Enlarged detail sketch of angle bracket showing simplicity of structural features and method of attaching to tower arm so as to obtain rigidity across the line and flexibility lengthways of the line.

tower crossarm in such a way that they are free to swing in the line lengthwise of the conductors, but are rigid in the plane transverese to the line. This semi-flexible arrangement relieves the bracket of any strain that otherwise might be incurred in the case of unequal span loadings or with wires broken and at the same time preserves rigidity in the plane of the tower itself. To accommodate the additional stresses in certain crossarm members caused by the brackets, additional bracing is provided within the crossarm. The accompanying sketch shows some of the structural features of the bracket.

The reduction in the number of insulators and dead-end positions necessary in the rough country through which this line passes is a prominent item of economy. The character of adjacent country made necessary the construction of this line along the

Angle tower in the Oak Grove transmission line of the Portland Electric Power Company showing the effectiveness of the crossarm bracket in obviating dead-end construction.

Clackamas River canyon and angle river crossings abound as a result. In the case of this line the saving in the cost of insulators and hardware is estimated at fully 30 per cent. Further, as dead-ends are found to be the source of a greater percentage of trouble than are suspension strings, insulator trouble also is reduced to a minimum.

IDEAS FOR THE CONTRACTOR

Electrical Estimating for the Contractor — VI (b)

Continuing the Discussion of the Electrical Layout for a Furniture Manufacturing Company

By J. R. WILSON*, Engineering Department, Los Angeles Electric Works

All modern woodworking plants usually have some machines on which it is necessary to increase the frequency above that provided by the power company serving the plant. This is necessary in order to increase the speed on the cutting heads of moulders and similar machines. In this plant a Vonnegut moulder has the heads designed for high-speed operation, with controllers to regulate the speed steps from low to high.

There are several ways of doing this and most of the electrical manufacturers build regular frequency changer sets to meet the need. In this plant the scheme developed by Fairbanks Morse & Company has proved very satisfactory and is the second interesting detail of this factory. The layout is simple, having no multiplicity of relays and regulators to contend with, and has proved its reliability in over a year of hard usage.

The set consists of one motor driven by another through a belted connection, and the data on this set are as follows:

Driving motor: 20 hp., 440 volt, 1,440 r.p.m. induction.

Driven motor: 35 hp., 1,152 r.p.m., 440 volt on stator, 240 volt from rotor. Stator amp., 42; rotor amp., 65.

The driving pulley is 8 in. in diameter, while the driven pulley is 10 in. in diameter. The induction motor drives the slip-ring motor in the opposite direction to that in which the slip-ring motor normally would rotate. By impressing the normal operating voltage on the stator 80-cycle current at 240 volts is taken from the slip-rings and delivered to the 240-volt motors on the moulder.

The only hazard in this set-up lies in the method of handling the control switches, as it is imperative that the induction motor be started and brought up to speed before the current is delivered to the stator of the slip-ring motor. Otherwise the slip-ring would reverse itself under certain conditions and owing to its larger size would tend to drive the induction motor. The wiring diagram in Fig. 5 will serve to make this set-up clearer.

The business of this firm has grown enormously since the plant was put in operation. While the plant has not reached its maximum production capacity new machines are being installed very rapidly. The soundness of the fundamental basis on which the plant layout was made is being proved by the ease with which the increased demands are being met. Space for expansion is provided on each of the sub-

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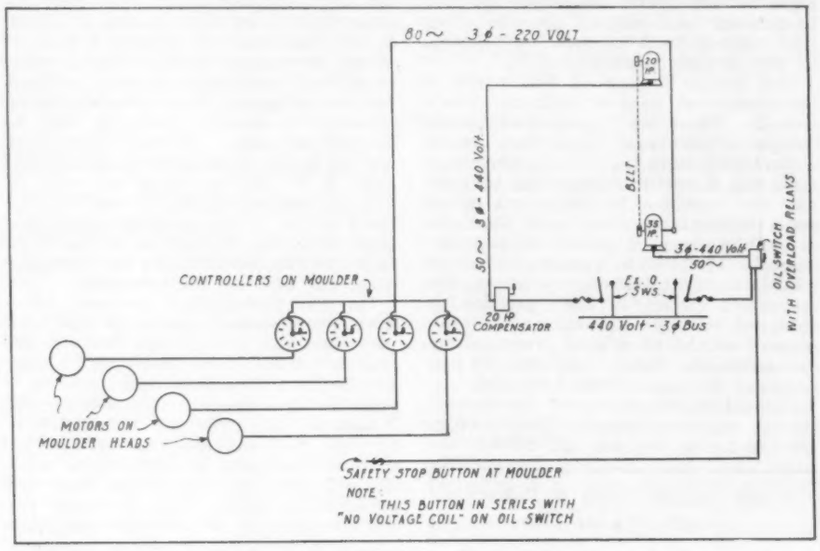

Fig. 5.—Schematic diagram of the wiring from the frequency changer to the moulder.

WIRING LAYOUT DATA—WHITE-SMITH MANUFACTURING COMPANY

	Machine	Switch Size	Fuse Size	Conduit Size	Wire Size	Control	Motor H.P.
Sub Panel 1	Blower	200A	200A	1¼	0	Compensator	75
Sub Panel 1	Frequency Changer	100A	100A	1¼	2	Oil Switch	35
Sub Panel 1	Frequency Changer	100A	65A	1	6	Compensator	20
Sub Panel 1	Rip Saw No. 1	60A	50A	¾	8	Compensator	15
Sub Panel 1	Rip Saw No. 2	60A	50A	¾	8	Compensator	15
Sub Panel 1	Carver	30A	20A	½	14	CR 7005	3
Sub Panel 1	Knife Grinder	30A	25A	½	12	CR 7005	5
Sub Panel 1	Pedestal Grinder	30A	10A	½	14	Exo. Sw.	1
Sub Panel 1	Jointer	30A	25A	½	12	CR 7005	5
Sub Panel 1	Belt Sander	30A	25A	½	12	CR 7005	5
Sub Panel 1	Swing Saw	30A	25A	½	12	CR 7005	5
Sub Panel 2	Mortiser	30A	15A	½	14	CR 7005	2
Sub Panel 2	Post Router No. 1	30A	25A	½	12	CR 7005	5
Sub Panel 2	Post Router No. 2	30A	25A	½	12	CR 7005	5
Sub Panel 2	Post Router Feed	30A	25A	½	12	CR 7005	5
Sub Panel 2	Shaper No. 1	30A	20A	½	14	CR 7005	3
Sub Panel 2	Shaper No. 2	30A	20A	½	14	CR 7005	3
Sub Panel 2	Shaper No. 3	60A	35A	¾	10	Compensator	10
Sub Panel 2	Rip Saw	30A	25A	½	12	CR 7005	5
Sub Panel 2	Single Drum Sander	30A	20A	½	14	CR 7005	3
Sub Panel 2	Tenant Mach.	30A	25A	½	12	CR 7005	5
Sub Panel 3	Lathe	60A	50A	¾	8	Compensator	15
Sub Panel 3	Disc Sander	30A	25A	½	12	CR 7005	5
Sub Panel 3	Jig Sander	30A	25A	½	12	CR 7005	5
Sub Panel 3	Special Sander	30A	25A	½	12	CR 7005	5
Sub Panel 3	Top Sander	30A	25A	½	12	CR 7005	5
Sub Panel 3	Belt Sander No. 1	30A	20A	½	14	CR 7005	3
Sub Panel 3	Belt Sander No. 2	30A	15A	½	14	CR 7005	2
Sub Panel 3	Dove Tailer	30A	25A	½	12	CR 7005	5
Sub Panel 3	Side Rail Router	30A	25A	½	12	CR 7005	5
Sub Panel 3	Boring Machine	30A	20A	½	14	CR 7005	3
Sub Panel 3	Band Saw	30A	25A	½	12	CR 7005	5
Sub Feed 4	Mitre Saw	30A	25A	½	12	CR 7005	5
Sub Feed 4	Stock Saw	30A	25A	½	12	CR 7005	5
Sub Feed 4	Spray No. 1	30A	10A	½	14	Exo. Sw.	1
Sub Feed 4	Spray No. 2	30A	10A	½	14	Exo. Sw.	1
Sub Feed 4	Spray No. 3	30A	10A	½	14	Exo. Sw.	1
Sub Feed 4	Spray No. 4	30A	10A	½	14	Exo. Sw.	1
Sub Panel 5	3-Drum Sander	100A	90A	1	6	Compensator	30
Sub Panel 5	Moulder Feed	30A	30A	¾	10	CR 7005	6/3
Sub Panel 5	Glue Spreader	30A	10A	½	14	CR 7005	1
Sub Panel 5	Glue Jointer	30A	30A	½	12	Compensator	7½
Sub Panel 5	Planer No. 1	60A	50A	¾	8	Compensator	15
Sub Panel 5	Planer No. 2	60A	35A	¾	10	Compensator	10
Sub Panel 5	Trim Saw	60A	50A	¾	8	Compensator	15
Sub Panel 5	Double End Tenoner	60A	50A	¾	8	Compensator	15
Boiler Room	Compressor	100A	65A	1	6	Compensator	20
Boiler Room	Vacuum Pump	30A	25A	½	12	CR 7005	5
Boiler Room	Oil Burner Set	30A	10A	½	14	CR 7005	1

Note: { Wire sizes conform to State Code.
{ Conduit sizes conform to Los Angeles Code.

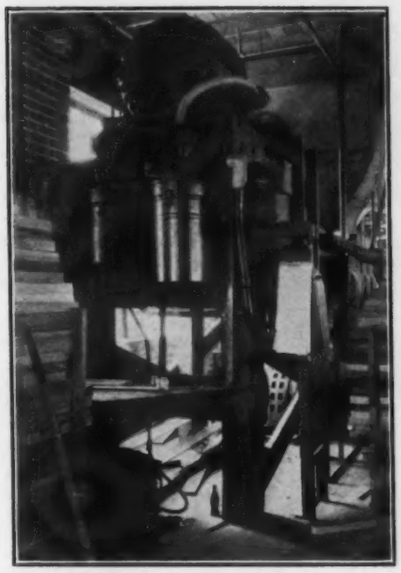

Fig. 6.—Partial view of sub-panel 1 showing compensator for blower and compensator and oil switch (upper left) for frequency changer outfit.

power panels and has more than justified the added investment in increased copper sizes. The fact that the increasing motor load is being added to these panels without any money being

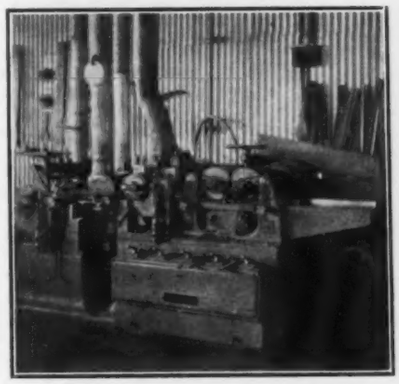

Fig. 7.—Vonnegut moulder showing controllers at the front of the machine.

spent for changes to the original layout speaks well for the thought given to the job at that time.

It Worked Both Ways

H. H. Stover, of the Domestic Electric Appliance Company, Colorado Springs, was showing an electric iron to a fastidious old lady.

"How much?" she asked.

"Seven-fifty, complete," replied Stover, handling the iron as a polite salesman does.

"What would it be without the cord?"

"Well, the cord is supposed to go with the iron, so I'd have to ask you $7.45 anyway."

"What? Only a nickel for the cord!"

"Yes. Just a nickel."

"Good. It was only the cord I wanted!" she said, as she deposited a five-cent piece on the counter and tripped out of the store with the coveted cord.

—The B. C. Electric Employees' Magazine.

"Know Your Business" a Guide for Contractors

Treatise on Electrical Contracting Business Studied By Electragists in Southern California

"Know Your Business" would appear to be superfluous advice, but if such were the case there would be no need of bankruptcy courts because there would be no business failures.

To know accurately at all times the financial condition of your business spells the difference between success and failure. Business is based upon certain rules and laws which are inherent to any line of effort, whether it be a "hot-dog stand" or a million-dollar steel corporation.

To say that a man is unfitted for business is the same as saying that he will not put forth the necessary effort to learn the laws and rules of business.

Of course if the business is of such a nature as to warrant it, or is large enough, a man may apply himself to only one phase of the business and learn that thoroughly. Speaking particularly of the electrical contracting business, most men in the game are former mechanics who have seen a chance, either real or imaginary, to make more money for themselves by entering business.

Starting upon a small scale, the natural desire is to keep expenses to as low a figure as possible until the business may have become established. This means that the embryo contractor will attempt to function in every capacity pertaining to his business.

If he has made a study of the laws aforementioned and erects his business upon the cornerstone of a first-class accounting system, which will keep him conversant with his financial status at all times, his little venture will have a fighting chance of surviving and growing with the years.

A business man is like the captain of a ship. He steers his course by the aid of his accounting compass and studies the chart of other men's failures so that he may avoid the rocks

National Association Sheet Metal Contractors

608 CHESTNUT STREET, PHILADELPHIA, PA.

THE FOLLOWING FORM FOR ASCERTAINING THE COST OF CONDUCTING BUSINESS, OR OVERHEAD, IS RECOMMENDED:

Some Local Associations have adopted the plan of having this blank filled in, without signature, or any identification marks, brought to the meeting and placed in a box. The "Price Committee" goes over these in open meeting for comparison.

Fill in amount for the three items enumerated below from your business for 192____

For Demonstration Purposes by the "Price Committee" at the meeting of _____

GROSS BUSINESS (This means your whole business) - - - - - - - - $_____

PAY ROLL (This means the money paid to those for whose services you made a charge) - $_____

OVERHEAD, OR EXPENSE OF DOING BUSINESS - - - - - - $_____
This means the money paid for:

RENT	$_____
INSURANCE—Fire, Liability, Accident, Compensation, Etc.	$_____
TAXES—Water, City, County, State, United States	$_____
ADVERTISING	$_____
PRINTING, STATIONERY AND POSTAGE	$_____
TELEPHONE AND TELEGRAPH	$_____
TRADE AND DAILY PAPERS	$_____
MERCANTILE REPORTS	$_____
LEGAL EXPENSES—Attorney Fees, Etc	$_____
COLLECTIONS	$_____
DUES TO TRADE ORGANIZATIONS, ETC	$_____
CHARITIES AND DONATIONS	$_____
SHOP SUPPLIES FOR WHICH NO CHARGE IS MADE	$_____
LOST TIME OF WORKMEN—Time paid for but not chargeable to any job	$_____
BAD DEBTS	$_____
ALLOWANCE—Reduction made to get settlement of account	$_____
DEPRECIATION—On Tools and Equipment	$_____
FREIGHT—Where not added to cost of material	$_____
CAR FARE—Where not charged to job	$_____
LIGHT—Gas, Electricity, Etc	$_____
POWER—Gas, Electric, Steam, Etc	$_____
HEAT—Gas, Coal, Etc.	_____
HAULING—Where wagon or truck is owned by establishment, this would include all costs of operation, such as driver's wages, feed, repairs, etc.	$_____
SALARIES—Money paid to those for whose services no charge is made, viz.: Bookkeepers, Clerks, Porters, Errand Boys, Managers and Owners, (where the latter do not work on jobs, money they receive should go in this item)	$_____
ITEMS NOT LISTED ABOVE	$_____

Additional Copies of this Form will be mailed upon request to the National Association

Overhead, or the cost of conducting business, easily may be ascertained by filling out the chart shown above. This particular one is issued by the National Association of Sheet Metal Contractors, but it is entirely applicable to the electrical contractor's business.

of business disaster. He logs his position through the aid of his journal and ledger, which give him an accurate record of the business miles he has traveled.

The fundamental laws of business are matters of record, as many writers have written an untold number of books upon the subject. The need heretofore has been for a book which covered each law in a brief, concise manner, and in such clear and simple language that even the most unlearned could understand what it was all about.

The electrical supply jobbers of Los Angeles realized this need, and realized also that their success was dependent upon the success and prosperity of their customers. In an effort to rectify the situation by supplying a book of this nature, and to erect a manument to the new spirit of cooperation between the branches of the industry, the jobbers prepared a paper entitled "Business Guide—Know Your Business."

This paper was presented to the contractors at the Lebec meeting of the California Electragists, Southern Division, in October. Those present asked that it be published in book form, and this has been done.

Budget Used in Planning Salt Lake City Homes

Local Committee Opened to the Public Two Demonstration Homes Furnished Under a Rigid Budget Plan

By MARY DOOLEY, Lighting Service Bureau,
Rocky Mountain Electrical Co-operative League, Salt Lake City

Anyone that has been connected with a demonstration home movement, electrical or otherwise, realizes how open to criticism most demonstrations are on the score of extravagance. It is easy to exhibit everything desirable with no thought of initial expense or of maintenance. To place all the known electrical appliances in a home is not a difficult matter; to choose only the most necessary household aids, those consistent with a $200-a-month income, is not so easy.

The Rocky Mountain Electrical Co-operative League felt that the "electrical home" of the past years had been called by many people impractical. The very thoroughness with which they were equipped made them objects of criticism. The budget system, which should be the fundamental idea in all demonstration homes, had been completely disregarded. So that when an opportunity arose to co-operate with the "Better Homes in America" movement it was welcomed by the league.

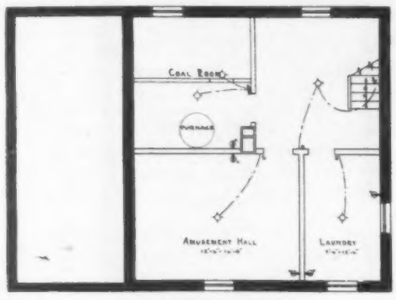

Fig. 1. Basement plan of the $6,500 home demonstrated in Salt Lake City.

In Salt Lake City the local committee opened two demonstration homes to the public furnished by the stores of the city under a rigid budget plan. The Rocky Mountain Electrical Co-operative League, through the Lighting Service Bureau, planned the wiring for the houses, which amounted to approximately three per cent of the total cost of the houses.

The house illustrated in Fig. 1 and Fig. 2 was designed to sell for $6,500, including the lot. It represents a typical five-room home with a more convenient plan than is found in most of them.

In all the rooms center lighting was used, with additional bracket lights and lamps. The entire house was furnished for about $1,800, including all furniture, rugs, draperies and appliances. An electric range, washer, iron, percolator and a toaster were considered the necessities in such a budget for the beginning housekeeper. A small ironer was exhibited also as a very desirable appliance which might be acquired by the owner later. The lighting fixtures were selected with economy in view, and, though inexpensive, they were very effective. There was nothing in the house that was not within the reach of a man earning $200 to $300 a month.

The more expensive house, designed to sell for $10,500, including garage and lot, was a two-story, six-room English cottage, designed by Pope & Burton, architects. Bracket lighting was employed extensively, and in accordance with the increased budget more expensive fixtures were purchased. More appliances were included within the budget also, as it represented the outlay for a man earning $400 to $500 a month.

This co-operation with the "Better Homes" movement is only a part of the house-lighting work which the league is developing. In the early spring during the season of greatest building activity the Lighting Service Bureau began residence lighting work. From the building permit list the names of the owners of new houses were obtained. About one-third of the houses in the city are built by contractors in block lots for sale at cheap prices. These men are the most difficult to approach successfully. Their wiring has always been done in the cheapest manner possible, and their houses sell in spite of it; hence, the argument that better lighting is a selling point is disregarded. Gradually as the public is educated to ask for more, the contractors will give it; competition will force it, but progress is slow.

With the people building their own homes and with the architects, the work of the league is more productive. The women are glad to talk over their lighting problems with another woman; the architects are relieved to have their electrical wiring planned for them. In both cases, however, work must be done in a reasonable manner at a cost which will be commensurate with the cost of the house, or the people lose confidence.

It is impossible to measure the value of this work to the power company in terms of increased revenue, or to the electrician and the fixture men on the basis of increased sales. The financial gain is evident, of course, for there is seldom a plan drawn or a consultation held that does not result in many additional outlets. The women are glad to spend the money when they are convinced it either adds to the convenience or to the decorative value of their homes. But more noticeable than monetary gain is an increase in good will and a heightened interest in better lighting. For personal contact is publicity as well as service; and when the Bureau helps a woman solve her personal problem an interested convert to the whole movement for better home lighting has been gained.

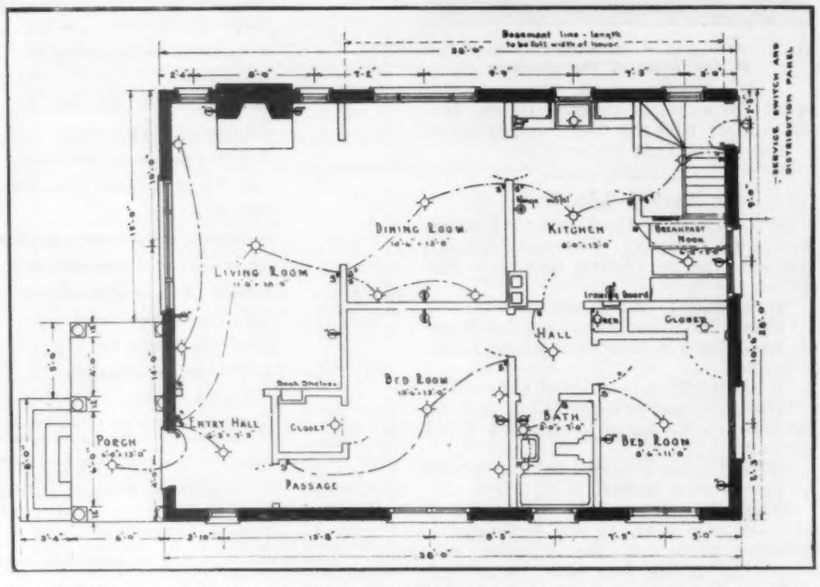

Fig. 2. Main floor. The wiring was laid out by the Lighting Service Bureau of the Rocky Mountain Electrical Co-operative League.

1

SALT LAKE CITY'S electric homes were consistent with moderate incomes. 1. The living room in the $6,500 home; the inadvisability of placing brackets above the fireplace when the chimney is only 5 ft. wide was emphasized. Two brackets were placed flanking the window at the right of the picture, and the chimney space was left uncrowded. 2. Bedroom in this home; the electrician placed the brackets too high. It emphasized to future builders the necessity of planning accurately the height of brackets before the completion of the wiring. 3. An inexpensive center light hung over the table in the breakfast nook. 4. Sun room in the $10,500 home. The wrought iron fixtures matched those in the dining room and living room. 5. The bedrooms in this home were lit by brackets and small lamps.

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BETTER MERCHANDISING

Fair Booth Exhibit Marked by Unusual Features

Valley Electrical Supply Company of Fresno Gives Frozen Grapes to 10,000 a Day and Gains Much Good Will and Many Prospects

By J. U. BERRY, Advertising Manager, Valley Electrical Supply Company

More than 125,000 persons attended the Fresno County District Fair during the week of Sept. 28-Oct. 3. It is estimated that over 80 per cent of those in attendance entered the booth of the Valley Electrical Supply Company.

Among the special features to attract and hold the attention of the crowds were grapes which had been frozen in the Servel ice cream cabinet. These were handed out to everyone. A toothpick was stuck into each grape to make the handling more convenient and sanitary.

Over 18,000 frozen grapes were served the first day. From 5,000 to 10,000 were served every other day.

Hot waffle cookies and hot cakes were served in small portions. An Everhot electric fireless cooker was kept in constant operation baking hams and cakes which were served later.

Much interest was shown in a demonstration of the Hoover vacuum cleaner in which glass-front and slow-motion machines were used to show the inner workings and action of the machine. Other action displays included a washing machine in operation, also a picture showing steaming hot cakes and coffee.

Among the unusual things which brought forth many expressions of awe and wonder was the largest Hotpoint iron and the largest Headlite type electric heater in the world. The heater was a 10-kw. size and stood 6 ft. high, the current being turned on at intervals.

A horseshoe-shaped demonstration table proved a great convenience, rendering it possible for the demonstrator to exhibit and demonstrate the various appliances to a much larger group of people at a much closer range than otherwise would have been possible with the usual straight table.

An inviting color scheme and an abundance of light were responsible for the unusual pulling power of the booth. The general color scheme was done in turquoise blue trimmed in gold. The entire floor space was blocked off in 26-in. squares and painted in two shades of grey oil paint with a 1-in. black stripe between the blocks to give the effect of linoleum, thus helping to magnify the size of the booth space. A platform 3 ft. wide and elevated 13 in. above the level of the floor was placed around the full length of the booth at the back walls.

Wallboard covered with dark blue imported wall paper of an artistic and pleasing design, edged with a stenciled wallpaper border of black and gold, was made up in 24-in. panels, 7 ft. high. These panels were used as dividers for unit displays of ranges, washing machines, Servel refrigerators and Hoover vacuum cleaners on the platform. The panels were placed on the front of the platform and topped off with 12-in. lattice work interwoven with tinted artificial oak leaves. Back of the lattice directly above each unit display was placed a large X-Ray reflector with a 200-watt lamp. Lighting fixtures throughout the booth added an artistic finishing touch to the decorative scheme.

No merchandise was sold at the fair booth. However, orders were taken for future delivery and the names of many prospects were secured. No high-power methods were employed to secure these prospects, and the taking of orders for future delivery was not encouraged. The Valley Electrical Supply Company had the only exhibit at the fair where a complete line of electrical appliances was shown.

The only proper method of conducting a fair booth of this character is to create an atmosphere that is free from any high-power selling, one that will cause the prospect to feel freely welcome to enter the booth and receive courteous and intelligent information regarding the lines displayed. The Valley Electrical Supply Company has found through its experience with fair exhibits that the most successful display is that one where something new and unusual is featured, where some tasty dainty is handed out to the public. With the frozen grapes which were featured this year a pleasant surprise awaited each and every one who entered the booth, for these grapes frozen as they were to a frosty crisp were refreshing and delicious. The novelty of it will not be forgotten by those who partook of them.

It is rather difficult to estimate the good-will building value of this class of advertising, but when it is possible to get the attention of over 100,000 people in one week and get their attention under the most favorable conditions, at a cost of less than one-half cent per prospect, it is a very desirable form of advertising that is of unquestionable worth in selling the electrical idea and getting the name of the firm indelibly impressed on the minds of thousands of potential buyers of electrical merchandise.

Apex Company Changes Policy in Denver.—The Apex Electrical Distributing Company, Cleveland, has decided to discontinue direct retail sales efforts in Denver, according to announcement made by H. P. Whitten, Western manager. It is understood that in the future merchandising activities of the Denver office will be along strictly wholesale lines with distribution through some local jobber. This policy conforms to the practice of the company in the other Western states under the supervision of the Denver office.

Attractive display booth at the Fresno County Fair, maintained by the Valley Electrical Supply Company of Fresno. The booth was the only one in the fair to carry a complete line of electrical appliances and, though making no particular sales appeal, gained many prospects and created much good will. Nothing was sold at the booth, but many dainties, electrically prepared, were given away.

How Attractive Windows Can Stop the Crowds

What Qualities Must a Window Have to Stop the Passerby? A Review of Some Windows Which Were Successful

Getting up an electrical window display which will stop crowds is not hard, but easy, with respect to origination or selection of the display idea. There are dozens of good display ideas around loose for anyone to use who will. Getting up a new display idea is not especially difficult. The hard part comes in executing the idea. Pains are required, real labor, often extra expense. Expenditure of the latter constituents by any electrical store or central-station salesroom can produce window displays with the "hit-them-between the-eyes" quality.

What are the things about an electrical display which will stop a crowd? Mystery is one—baiting human curiosity. Novelty is one—capitalizing normal human interest in the new. Dramatic quality is a third—making the passer wonder, "What's happening?" and to pause to find out. Once a window trimmer understands the possibilities in these three display qualities, he can decide almost infallibly in advance whether or not a given display idea will stop the crowd.

One of the best illustrations of the latter appeal seen lately was at the Boulder office of the Public Service Company of Colorado. Here was a display—a court scene, dolls being used—which immediately conveyed to the passer the drama suggestion. Obviously, something was happening. What was it? The crowd paused to find out. It read the display cards which, with the display, conveyed the story.

At the extreme right in the wide window was the "prisoners' dock," occupied by Dusty Broom, Ima Beater, and Carpet Sweeper. Standing near and indicating these as she addressed the judge was the prosecutor, saying, "Your Honor, the defendants are charged with beating the life out of A. Rug, with disrupting the American home and shortening the life of the housekeeper."

The conversation in this window was lettered on large cards, so-called "breather" style, by a veteran cartoonist and were suspended from above by practically invisible thread. The cartoon conversation effect was very realistic.

At the left of the judge's bench was the jury box, peopled with dolls, announcing their verdict, "We find the prisoners GUILTY." The judge was pictured saying, "I sentence you to be forever banished from the modern home. The court advises housekeeper to investigate the Hoover." Finally, at the extreme left a vacuum cleaner was displayed with a big card which read, "$2 puts a Hoover in your home."

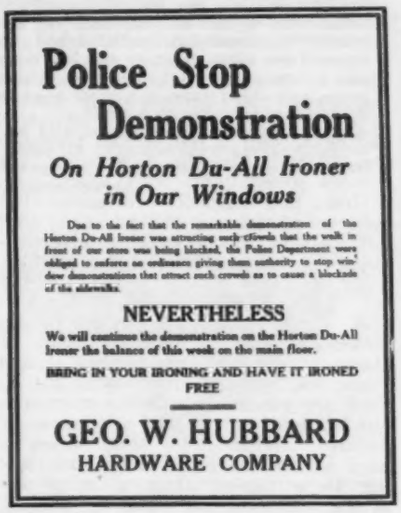
The Cartoon Window

Most "stop-the-crowd" windows require special labor. Another Boulder window, put in by W. G. Clary, floor man, necessitated special cartoon life-size cut-outs. A capable cartoonist is available in Boulder, and was turned to for the "Andy Gump" window.

The Gumps are perhaps among most popular cartoon characters conceived. When an electrical window uses them it establishes quick contact with a large section of the public. The big Public Service Company window was divided into two rooms by a partition for this window. In one compartment Andy Gump was shown life-size surveying a washing machine. He shouted, "Oh, Min!" Min was portrayed doing the washing in the other compartment in the old-time way at the washboard. A card conveyed the final punch, that now better days would come.

Good novelty electrical windows have in them a quality approaching the "sensational" as applied to news, though "sensational" is too extreme a word to use. A good washing-machine window which can be depended on anywhere to stop crowds is built around a washing machine in operation and a big mirror. With soap and glycerine bright suds are made to fill the interior. The mirror is suspended above so that, looking into it, the passerby sees the suds. This display is particularly effective for night use, as the passerby appears to see two washing machines placed end to end, with the suds in one defying the laws of gravity.

Adding a final touch to the display, a clothesline is stretched across the window, and cards shaped like pieces of clothing are attached to it with clothespins. On these cards matter describing special features of the washer is used.


Police Stop Demonstration
On Horton Du-All Ironer in Our Windows
Due to the fact that the remarkable demonstration of the Horton Du-All Ironer was attracting such crowds that the walk in front of our store was being blocked, the Police Department were obliged to enforce an ordinance giving them authority to stop window demonstrations that attract such crowds as to cause a blockade of the sidewalks.
NEVERTHELESS
We will continue the demonstration on the Horton Du-All Ironer the balance of this week on the main floor.
BRING IN YOUR IRONING AND HAVE IT IRONED FREE
GEO. W. HUBBARD
HARDWARE COMPANY

A clever advertisement tie-in with a "stop-the-crowd" window that helped to create additional interest.

The Atmospheric Window

Novelty is the oustanding quality of this window. So also is it that of a fan window put in last season by John West at the Denver office of the Public Service Company of Colorado. From a fur company he secured the loan of a giant stuffed polar bear. Electric fans in motion were shown. The polar bear, carrying the arctic suggestion powerfully, was an extremely novel thing to see in a public-utility window. In itself it practically guaranteed the success of the display.

Another fan display, which in a relatively small Western city sold thirteen fans the first day it was in, also used novelty, the presentation at the same time powerfully carrying the suggestion of cold. The trimmer with a brush and whiting painted snowflakes all over the front window. Toward the base of the window the effect of piled-up snow was created. Cotton over the window floor carried out the effect of snow. Then three fans, oscillating, with streamers, were shown. The display man spent two days constructing this display, bearing out the statement that perspiration is fully as important as inspiration in producing "stop-the-crowd" electrical displays.

Live Twins Draw Crowds

With some successful windows the principal obstacle may not be physical work of window preparation but that created by difficulty in locating needed material. A recent window at the gas and electric offices in Denver that blocked the sidewalk was featured by a pair of eighteen-months old twins. Dressed in their prettiest, they played in sand in the window. With cards a tie-up was secured with vacuum cleaners, which were exhibited in the win-

Dramatic interest created by a court scene in this Boulder, Colo., window of the Public Service Company of Colorado brought the passersby to a stop to see what was going on and incidentally to receive a sales message.

dow rear. In most communities the electrical man who started out to hunt up a pair of twins for such a purpose certainly would have his hands full. Lucky circumstances in the instance mentioned brought a parent of the twins into the company offices with an offer of his children for window-display purposes.

Of course, human objects per se are much more interesting to people than inanimate objects. Moving things, per se, are more interesting than stationary things. When this has been said, however, the matter reverts to the essential power of novelty in display. If twins were seen in electrical windows constantly, they would not stop crowds.

Mystery Always Attracts

Examples of good "mystery" windows are not so easily found. One such used at the time of the King Tut furore during the latter part of last winter was so mysterious in its presentation that people seeing it would cross the street to satisfy their curiosity. What the crowd saw was a window which, except for a doorway in the middle, wasn't a window but a mass of cracked rocks. Within, the whole window, except for the doorway in the center had copper board painted in the rock effect against the pane. The doorway was 2½ ft. wide and 6 ft. high. Steps led away from it. The floor of the window was covered with painters' cloth painted yellow. The sides and back were painted copper board in cracked rock effect, but more like a tomb. In the center was a box covered with canvas which was painted to look like a big rock. Along the front was a row of colored footlights, red, green and blue.

Every attempt was made—and with success—to create a very "spooky" atmosphere. The final furnishings were mummies. The artist used strips of copper board and painted them to resemble mummies. One was old King Tut, another was little Tut, shown with a couple of chariot wheels, and the third was Mrs. Tut. On the big rock in the center was a vacuum cleaner. Mrs. Tut was shown with an antique replica of a broom.

A suspended card read—"MRS. TUT WAITED 4,000 YEARS FOR HER HOOVER. HOW LONG ARE YOU GOING TO WAIT FOR YOURS?"

Curiosity prompted the crowd to look in the doorway. Then it was held by the novel quality of what it saw there. Novel! It was nothing else but that. That window kept big crowds before it.

Lighting Effects Useful

One thing an investigator repeatedly observes is this—one single window trick or method will often suffice to "put a window over." Suppose small appliances are on display—a range of items. Other than that it is tastefully decorated and there is no special compelling attribute of the window.

Through the evening hours there is assuredly a very simple method the store can use to bolster up the display—lighting effects. Whenever the Public Service Company at Boulder has a small appliance window, the fact is reflected in appliance sales. One such window recently was strengthened at night through an unusual light combination. Lights in one-half of the window were red, in the other half blue. Coming up the street there was the red to compel attention, from the other direction blue, with a blending effect, depending on the passerby's movement, which, at a point directly opposite the window, produced a pure lavendar effect. The lavendar streak "got" people.

On another occasion the entire window was in a warm red. Across the street are premises not lighted at night. Against these the red light was reflected. Many pedestrians, seeing this reflection first, thought there was a fire in the vicinity and investigated—the small appliance display got attention.

At another Western Doherty property was a display which capitalized the possibilities in lighting effects. There was a "bathing baby" in the window—a window help furnished by a manufacturer. There was a cozy glow in front of this, and the baby was apparently lighted by it, bathed in a warm red. Actually a concealed spotlight, with a red screen, produced the effect. For the balance of the window green lights were used.

Green is a decidedly cold color. The contrast of the rosy "baby" in the chill environment was a striking advertisement for the appliance.

The Appeal of Old Junk

A queer streak of human nature makes possible a general group of electrical windows practically always "sure fire," yet not laborious to put in. Such are windows which use promiscuous heaps of old, junked appliances or fixtures. What it is that makes a used article inherently more interesting to a person than a brand-new article, showing no signs of use, is more or less beside the point. An old shoe is inherently more interesting than a brand-new one. An old appliance or fixture in a window draws interest like a magnet. Whose was it? What is its history? and other questions the onlooker instinctively thirsts to know the answer to.

When electrical stores have offered a stated or general allowance for old fixtures, percolators, toasters, etc., turned in toward new ones, and have heaped the "junked" items in the window, it has been observed that they always attract with their novelty and the properties of inherent interest just mentioned. They are good "stop-the-crowd" windows from two angles. They not only stop—they sell merchandise.

Window results, since the question has been touched upon, deserve passing observation. On small appliances, good electrical windows will pull people in from the crowd actually to buy. On big objects like washers and cleaners, directly observable results are bound to be much less in number, the logical prospects in the passing crowd being much less numerous. However, any "stop-the-crowd" window on a washer or cleaner should increase definitely the number of inquiries and leads and be well worth the effort spent in preparing it.

El Paso Sales Department Studies Electric Refrigerators

Converting the regular weekly sales meetings of the sales department into a study course on electric refrigeration, the El Paso Electric Company, El Paso, Texas, intends to make the most of its opportunities in the sale of such appliances, according to W. R. Bell, sales manager.

The course offered salesmen is divided into six units, one unit being discussed and studied at each meeting. The course is supplied by the Kelvinator Institute, and is said to be very complete. It embraces not only the selling plan but explains in detail how the refrigerator is built and upon what principles it operates. Servicing of the machines also is taught.

Apartment's 25 Ranges Displayed in Salt Lake Office

A display of twenty-five Hotpoint electric ranges on the sales floor of its Salt Lake store, all of which were to be installed in a new apartment house, proved to be an effective method used by the Utah Power & Light Company in conveying to the public the message of electric cooking.

These ranges were displayed in an attractive manner on both sides of the section of the sales floor where they readily could be seen by everybody entering the store. They not only created interest in electric cooking, but assisted the owner of the apartment house in gaining publicity. A large sign told the story.

Previous to installation, twenty-five ranges sold to a new electric apartment house in Salt Lake City were placed on display on the floor of the Utah Power & Light Company store to show the popularity of electric cooking.

Santa Ana Officials Want to Eliminate Dark Signs

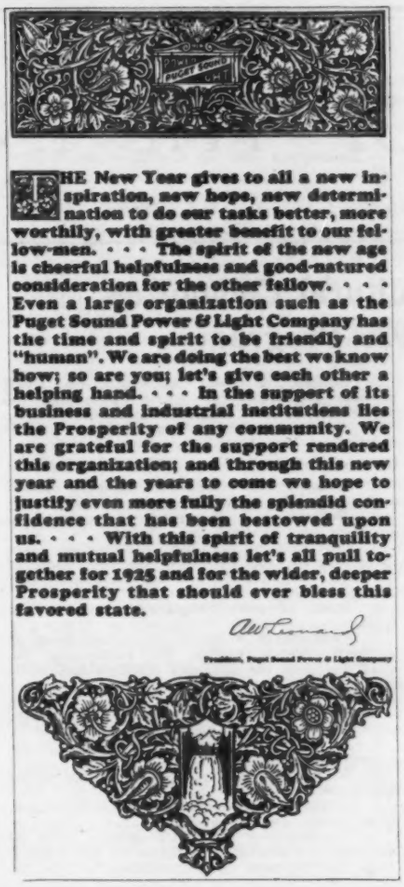
Aiming to improve the appearance of the city by the elimination of unlit signs on its streets, the board of trustees of Santa Ana, Calif., has passed an ordinance which provides that all advertising hangers which extend over any part of sidewalk or street and carrying illuminating lights or fixtures, must be kept lit between the hours of 7 to 9 p.m. during the months of October, November, December, January, February and March, and between the hours of 7:30 and 9:30 p.m. during the months of April, May, June, July, August and September.

Penalty for violation of the ordinance is provided in the shape of fines to be levied against the violator. In the case of continued refusal to comply with the regulations the electrical inspector of the city or his authorized agent may remove the sign and order the lights disconnected.

City Engineer Would Standardize Street Light Equipment

That the board of directors of Pasadena, Calif., have all future ornamental lamp posts made from a pattern originated and owned by the city is the recommendation that has been submitted to R. V. Orbison, city manager, by W. C. Earle, city engineer. This would make it possible to lower the cost of future installations and tend to improve the general appearance of the city streets.

Drawings of double and single light standards for business and residence streets were submitted by Mr. Earle with his report. He recommended that the standard post adopted be of cast iron.


THE New Year gives to all a new inspiration, new hope, new determination to do our tasks better, more worthily, with greater benefit to our fellow-men. • • • The spirit of the new age is cheerful helpfulness and good-natured consideration for the other fellow. • • • Even a large organization such as the Puget Sound Power & Light Company has the time and spirit to be friendly and "human". We are doing the best we know how; so are you; let's give each other a helping hand. • • • In the support of its business and industrial institutions lies the Prosperity of any community. We are grateful for the support rendered this organization; and through this new year and the years to come we hope to justify even more fully the splendid confidence that has been bestowed upon us. • • • With this spirit of tranquility and mutual helpfulness let's all pull together for 1925 and for the wider, deeper Prosperity that should ever bless this favored state.

New Year's message of unusual power, dignity and feeling, published in the form of a large advertisement by the Puget Sound Power & Light Company last year, which sounded a keynote of service for the new year.

B. C. Utility Reduces Lighting Rates in Vancouver

Commercial lighting rates in Vancouver, B. C., have been reduced and placed on a demand basis by the British Columbia Electric Railway Company, effective Nov. 1. From a former flat rate of 5 cents a kw-hr. the rate has been reduced to 4½ cents a kw-hr. for the first step, dropping to 2 cents a kw-hr. for the second step. The first 100 kw-hr. per kilowatt of demand per month will be at the 4½-cent rate; all in excess will be at the rate of 2 cents. The former minimum charge of $1 per kilowatt of demand for a month still applies.

In addition to these rates, discounts for large quantities are given on the primary rate, as follows:

First 1,000 kw-hr. per month, no discount. Next 1,000 kw-hr. per month, discount ½c per kw-hr. Next 1,000 kw-hr. per month, discount 1 cent per kw-hr. Next 1,000 kw-hr. per month, discount 1½ cents per kw-hr. Excess over 4,000 kw-hr. per month, discount 2 cents per kw-hr.

In estimating the maximum demand, electric signs and other exterior lighting are included to the extent of only 1/3 of the true value.

The new rates will be available to 8,000 commercial lighting customers. The majority of these have been paying a flat rate of 5 cents a kw-hr. with a minimum charge of $1 per kilowatt of demand per month. A number of small offices still pay 6 cents

In order to make the new rate understandable as well as to encourage the use of current for electric signs, store window lighting and other additional uses, the power company has issued a 12-page booklet describing the effect of the new rate in general.

Portions of the floor display of the Denver office of the Public Service Company of Colorado. This company does a large merchandising business in its territory and, as the picture shows, believes in a well lighted and attractively arranged show room to increase sales. The arrangement of the showroom was planned by E. T. McSpadden.

NEWS OF THE INDUSTRY

Washington Agricultural Committee Lays Down 1926 Program

The Washington Committee on the Relation of Electricity to Agriculture at its executive committee meeting at Spokane, Wash., Dec. 7, adopted an intensive program for 1926. The committee has been active for one year, taken up principally by a study of typical rural lines in the state, under direction of L. J. Smith, committee secretary; Harry L. Garver, investigator; and approved by E. C. Johnson, chairman of the executive committee, all three men of Washington State College, Pullman. The work is being done on the basis of a five-year program handled as an agricultural experimental station project.

Following receipt and discussion of an exhaustive report on the 1925 survey, the executive committee outlined subjects for study and research for the coming year. As there are about 20,000 rural electrical users in the state, it was thought unnecessary for the Washington committee to organize an experimental line. The committee had viewed during the day a film showing the experiment at Red Wing, Minn.

The 1926 program contains a grading of the importance of the work, given the values of A, B, C, and D. They are as follows:

Subjects for Eastern Washington—

1. Development of a portable farm-community motor for use on an observation line at Pullman for silo filling, hay and straw baling, hay cutting, grain grinding and wood sawing. (C).
2. Development of a safe and more economical electrically heated water trough for use in winter where there is a large number of stock on a farm. (C)
3. To install and get data on a number of small pumping units for irrigation in the Wilbur district.
4. Studies on the monthly cost of operating kitchen ranges (coal and wood). (A)
5. Power consumption of electric incubators and brooders. (A)
6. Value of ultra violet ray in raising chicks. (A)
7. Study of power hay hoists and electrical refrigeration. (D)

For Irrigated (Central) Districts of the State—

1. Comparative studies of pumping with the electric motor and the internal combustion engine. (A)
2. Comparative studies of portable and stationary spray plants (electric and tractor). (B)
3. To develop labor-saving device for adjusting motor and pump to the varying levels of the Columbia River.
4. The use of electric power in orchards for frost prevention.
5. Saving of alfalfa leaves in baling (for the poultry industry).
6. Application of electric fan for night cooling of farm products in general, following apple-cooling bulletins.

For Districts West of Cascade Mountains—

1. Irrigation in the berry districts. (D)
2. Ultra violet ray for chicks. (A)
3. Irrigation for summer green feed for poultry and for garden stuff. (C)
4. To develop the use of a small power unit on the larger poultry farms. (B)
5. To extend the use of carrier devices to allow silos to be filled with a smaller motor. (B)
6. Studies of costs and utilizing small streams as sources of electric power and the success of present small installations.
7. Artificial curing of hay by means of circulation of heated air.

General Subjects—

1. Issuance of a circular on dimming devices and wiring for same for poultry houses. (A)
2. Centralization of the power requirements on dairy and grain farms. (B)
3. Cost data on pumping water for the farm stead and the application of fire protection on the farm. Application and cost of motors now installed. (A)
4. Study of power requirements for prune drying.
5. Preliminary work on the development of a small electric tractor for cultivating the small fields of the irrigated districts and western counties.
6. Fitting up a farm shop on each line with a shaft and electric motor to operate drill, blower, grinder, saw, etc. (C)
7. Reports and bulletins, studies and investigations outlined.
8. Study of the application of household appliances to the farmhouse. (B)
9. Electric fly extermination for milk houses, dairy farms and kitchens.
10. Development of motion picture study of the uses of electricity on farms in the state.
11. Development of fair exhibits.

Would Improve Flood Lighting on San Diego Park Tower

Plans are under way for more efficient and spectacular illumination of the "California Tower" in Balboa Park, San Diego. The matter was discussed at a recent meeting of the tourist and convention committee, San Diego Chamber of Commerce, and an outline of the proposed plans was presented by G. H. P. Dellman, of the San Diego Consolidated Gas & Electric Company, a member of the subcommittee on this project.

One suggestion under consideration is that the tower be lighted as it was during the Panama-California Exposition; that would call for sixteen floodlights and would require an outlay of $1,172 during the first year.

The second plan involves the installation of eight 500-watt lights and twenty-four 250-watt lights at a total cost of $1,650. This covers installation and one year's lighting, divided as follows: installation $870; lighting $780. Mr. Dellman believes the latter plan would be preferable and that it would warrant the additional expenditure required. A subcommittee of the Chamber of Commerce has been appointed to draw up detailed sketches for presentation to the Board of Park Commissioners.

The California Building tower recently was illuminated with temporary equipment under the auspices of the San Diego Electric Club. The illumination thus provided has served as a means of creating a desire on the part of the community to light the tower by more permanent and effective means.

Hoover Recommends Committee on Colorado River Question

Agreement among the states of the Colorado River basin that would permit the development of the resources of the river might be hastened, Herbert Hoover, Secretary of Commerce, told the Senate committee on irrigation and reclamation, which has before it the Swing-Johnson Bill, were a Congressional commission appointed for that sole purpose. Mr. Hoover in his testimony before the committee used as a basis for his remarks the estimate which puts the cost of the Boulder Dam at $42,000,000 for construction, $33,000,000 for electrical equipment, and $27,000,000 for transmission lines. The aggregate of the various other items would make the cost of the project $115,000,000.

"The people of southern California," Mr. Hoover told the committee, "recognize that the eastern and central states probably will not be anxious to find the whole $115,000,000 for this development. The Californians, however, have expressed their willingness to make a substantial contribution to it coming from the municipalities and the private power companies. The federal government has a substantial obligation in connection with the development.

"Someone ought to be given authority to negotiate a definite financial contract which could be laid before Congress for ratification. . . . . Our path would have been smoother had the Colorado River compact been ratified, but where we have such wide differences of view we must expect difficulties."

Mr. Hoover minimized the objection to the Boulder Dam based on evaporation losses. This will not become a matter of concern for seventy-five years, he declared, as all of the water in the Colorado cannot be used prior to that time. Then other dams will have been built which will have removed the objection.

Byllesby Contest Prize Awarded California Utility Man

A contest conducted by the Byllesby Engineering & Management Corporation in connection with the adoption of a manual of organization standards for field work in its construction department has resulted in the awarding of $100 to L. M. Klauber, general superintendent of the San Diego Consolidated Gas & Electric Company, for the greatest number of useful suggestions.

The contest was held for the purpose of naming and constructively criticizing the new manual. "Field Organization Standards" is the name adopted.

City Power System Condemned by Farm Bureau Head

Maintaining that the farmer is sure to suffer from poorer service and higher rates if the existing light and power systems are broken into by the acquisition of profitable city business by municipalities, the California Farm Bureau Federation has filed with the State Railroad Commission a protest against the plan of the City of San Francisco to condemn and acquire the San Francisco distribution plants of the Pacific Gas and Electric Company and the Great Western Power Company. The protest declares that the condemnation should not be allowed unless a way can be devised to protect the rural districts against damage, and leaves to the Railroad Commission the difficult task of devising such a plan.

Presented by its manager, J. J. Deuel, the protest of the federation was made a part of the record in the condemnation case of the Great Western properties. The contention is strongly made, and supported by much evidence, that present rates and efficiency of service are the result of a policy of consolidation which has brought about the uniform load necessary to profitable operation at a reasonable rate. With the loss of city distribution loads, uniformity will be destroyed, resulting, according to the federation's contention, in increased costs of rural electrical service.

The valuation of the Great Western Power Company properties was placed at $5,969,455 by R. M. Vaughn, valuation engineer of the Railroad Commission, after the depreciation figure had been subtracted. The original valuation of the same operating properties was $7,463,072. The valuation of the Great Western's share of the properties of the Universal Gas and Electric Company, owned jointly by the Great Western Power Company and the Pacific Gas and Electric Company, was placed at $2,280,136 with depreciation deducted, an original valuation of $2,785,437.

Some of the more salient statements of the protest were worded as follows:

Electric service at the lowest feasible rates is vital to agriculture, and it is no less important to the cities that their back countries should so receive electric service.

The electric service of today requires coordination of widely separated generating plants. The business requires that the widely varying demands of many different classes of load shall be gathered together and fed from a common pool.

The action of the city of San Francisco in this case is a step backward; it represents retrogression, not progress—a splitting up of the system loads into its elementary parts.

Electric service in California is rendered by systems, not by cities. All elements are interdependent—each helps the others. San Francisco is proposing to condemn local properties and businesses; is proposing to take from consumers a part of that which now serves them. We have the right to demand that if such a proceeding is consummated, it must be upon a basis that will leave rural consumers forever as well off as they would otherwise have been.

If San Francisco should insist that electric service within the city be self-contained and separate from the interstate systems now in existence, the people of the state have the right to demand that San Francisco find some means to give to all other residents of California, at its own expense, a full and perfect equivalent forever.

We regard the proposal involved as a step backward. It is an effort to split apart rather than consolidate. It is a policy that on the average means higher rates and less efficient service.

Justice demands that country consumers must in such proceedings as this be given the benefit of all doubts. They must not be required to assume the hazards of the future. Those hazards must be borne by the cities that make the hazards.

We submit furthermore that this proceeding is not an engineering matter, but a business and economic matter, and that after full consideration of all these matters, the commission find means to shape its decision that the farmers of California be left undamaged.

Puget Sound Co. Buys Power Property at Bremerton

As a climax to the acquisition of light and power properties on the Olympic peninsula in Washington, the Puget Sound Power & Light Company of Seattle has purchased the distributing system and other electric properties of the North Pacific Public Service Company, now operating in Bremerton, Charleston and Paulsbo, and will take possession Jan. 2.

The money involved in the establishment of what will be a new division on the Olympic peninsula, including the cost of the building of the station and laying of the necessary cables across the water amounts to more than $2,000,000, according to W. H. McGrath, vice-president of the Puget Sound company. The transaction, which completes the company's purchase program as far as the Olympic peninsula is concerned, opens the way to the organization of a western district of the company with headquarters at Bremerton.

Included in the purchases made during the last sixty days have been the high-tension transmission line of the Northwestern Power & Manufacturing Company of Port Angeles; the distributing system and two power sites on the Dungeness River from the Sequim Light & Power Company, and the holdings of the North Pacific Public Service Company at Bremerton, the last named adding about 5,300 customers alone to the company's list. The area of the new territory acquired by the company is approximately 4,000 sq. mi.

The company announces that this new territory is to be linked to the great interconnected mainland system of the company by means of submarine cables. These cables, which will comprise two in the neighborhood of Edmonds at President's Point, and emerge at a point about halfway between Port Gamble and Keyport, will be connected with high-tension transmission lines with the existing transmission systems. The cost of the two cables is estimated at $350,000, and they are to be ready to give service early in the new year. They will carry power from the company's new Baker River project. Each cable will be 26,000 ft. long and will have a total capacity of 20,000 hp.

Power Company Renames Plant in Honor of Engineer

The Southern Sierras Power Company of Riverside, Calif., by resolution at a special meeting of the board of directors has changed the name of one of its power plants to honor the late C. O. Poole, chief engineer of the company. The main part of the resolution declares, "that hereafter the Leevining Creek No. 1 plant shall be designated the Poole plant in recognition of the engineering skill and invaluable services rendered our associated companies by the late Charles Oscar Poole."

Arizona Makes Counter Proposal on Colorado River Water

Representatives of California and Nevada at a meeting held in Los Angeles Dec. 18 heard and unofficially rejected Arizona's answer to their proposal of a tri-state agreement on the development of the Colorado River, made in Phoenix, Ariz., Dec. 1. (Journal of Electricity, Dec. 15, 1925, p. 464.) A statement issued by the entire membership of the California and Nevada committees declared that "some of the Arizona proposals seem to us untenable but we are endeavoring to prepare a basis for further discussion with Arizona." Arrangements are being completed to bring the representatives of the three states together shortly after Christmas.

Arizona's counter proposal in effect ignores the existence of the Colorado River compact, drawn up in Santa Fe, N. M., in 1922. Other provisions of Arizona's answer are:

It specifically states that Mexico has no rights in the water of the Colorado River. The tri-state agreement does not mention Mexico.

It provides that water originating in a tributary of the Colorado River in any of the lower states belongs to that particular state. This agrees with the provisions of the tri-state agreement.

It allots 300,000 acre-ft. of Colorado River water to Nevada. This also is in accord with the tri-state agreement.

The remaining water in the river is to be divided equally between California and Arizona. This provision is looked upon as a serious obstacle in the way of arriving at an agreement concerning the development of the river as it is an apparent repudiation on the part of the Arizona representatives of all rights to the use of the water by the four upper basin states. The tri-state agreement made provision for an equal division only of the water allocated to the lower basin states by the Colorado River compact and not of the total flow of the river.

Ownership in all dams, hydroelectric power plants, and engineering works shall vest wholly in the state or states in which these properties are located. Royalties or taxes may be collected by the state or states in which these plants are built. A provision is made whereby the United States government may build these various projects for the states and have the states refund the money later.

Course in Public Utilities to Be Given by U.S.C.

Metropolitan College of the University of Southern California has announced that beginning in December a course in public utilities will be made available to the people of the industry living in Los Angeles. The course will run for three months, at a total cost of $10, with the class meeting each Monday evening from 6 to 7:30 o'clock.

George J. Eberle, professor of statistics and public utilities at the University of California, will conduct the class. Professor Eberle is a member of the firm of Eberle & Riggleman, consulting economists and statisticians. He formerly was connected with the Wisconsin State Railroad Commission and a special consultant of the Canadian Railways.

Los Angeles G.E. New Buildings Soon Ready for Occupancy

Offices of the southern California division of the General Electric Company are being moved into their new headquarters at Santa Fe Avenue and 52nd Street, Los Angeles. The two-story office building, which has just been completed by the Austin Company of California, provides twenty-six well lighted and ventilated offices with the most modern equipment throughout. Inter-communication phones, a pneumatic tube system connecting with the adjoining warehouse and service station, and a complete electrical heating system already have been installed. The building is an L-shaped structure, 110 x 96 ft., of brick construction, with an ornamental stone front.

Work on the large three-story warehouse now under construction by the Austin Company is progressing rapidly, and the building will be ready for occupancy soon after the first of the year. When the warehouse is finished and equipped the General Electric Company's Los Angeles plant will represent an investment of approximately $1,000,000, and that city will be made one of the principal distribution points of the company.

The warehouse, which is now being erected by the same company, is a class A building, 240 x 80 ft., and is of brick, concrete, and steel construction. This building is being finished to three stories with allowances made for an additional story. The warehouse will be equipped with six traveling cranes of five-ton and three-ton capacity and other devices for handling the heavy electrical machinery. The unit also will be equipped with two large freight elevators.

The new unit is on a five-acre tract recently purchased by the General Electric Company and adjoining the present service building. The various activities of the company will be consolidated, and provision is being made for future expansion. The plant will be the last word in modern efficiency, labor saving and cost reduction in the handling of volumes of electrical equipment ranging from incandescent bulbs to transformers, motors, generators and other heavy electrical equipment.

The new unit of the Los Angeles plant is expected to be finished soon after the first of the year.

Acting for the General Electric Company in the negotiations and working out the engineering features with the Austin Company of California were G. E. Emmons, one of the former company's vice-presidents, J. A. Cranston, the Pacific Coast manager, and S. E. Gates, manager of the General Electric Company's Southwest operations.

New offices and warehouse of the General Electric Company in Los Angeles, now being completed by the Austin Company of California. Top—The office building, already completed, showing the warehouse in course of construction in the rear. Bottom—Interior of the lobby in the office building.

Would Stop San Joaquin Storage Projects on Kings River

Seeking court action to prevent the San Joaquin Light & Power Corporation from carrying out contemplated storage of the waters of the Kings River in central California in connection with its Kings River hydroelectric development, two complaints have been filed in the superior court at Merced, Calif. The East Side Canal & Irrigation Company and James J. Stevinson, Inc., the two complainants, claim rights to the natural flow of the San Joaquin River from which each derives water for irrigation.

The East Side Canal & Irrigation Company asserts a riparian right and lays claim to exclusive privilege of diversion of 500 sec.-ft. from the San Joaquin River and contends that the power project of the San Joaquin Light & Power Corporation will result in failure of any water to reach the irrigation company's canal at certain times. This water from the Kings River reaches the San Joaquin River through Fresno Slough, the complaint recites.

The Stevinson corporation asserts itself entitled to the natural flow of the Kings River. Neither of the complaints affects in any way the Balch plant now under construction by the San Joaquin Light & Power Corporation, as no storage is contemplated in connection with this plant.

Forest Fires Cause Interruption to Santa Barbara Service

Forest fires in the mountains between Casitas Pass and Ojai, about five miles south of Santa Barbara, caused an interruption of several hours duration to the electrical service for that city on Nov. 20.

Two 60,000-volt transmission lines of the Southern California Edison Company supply the electrical energy for the city. One of these, a wood pole line from Castaic substation, was burned so badly that it will be necessary to rebuild several sections. The other, a steel tower line from Saticoy substation, was not damaged seriously although some of the insulators were broken down and in a few places the conductor was severed by the extreme heat. No accurate estimate of the cost of the damage done is possible at this time, but an approximate figure has been set at $3,000.

Permit for Fresno County Sector of Vincent Line Sought

The Southern California Edison Company on Nov. 17 filed an application with the county supervisors of Fresno County for a franchise for its new transmission line across Fresno County from Cascada, the headquarters camp of the company's Big Creek-San Joaquin project, to Orange Cove, at which point the line enters Tulare County. The supervisors made the first move in the granting of the franchise by passing a resolution authorizing the county clerk to take the preliminary steps required by law.

This franchise, which covers a period of fifty years, will take care of the Fresno County sector of the Vincent line, the third Big Creek-Los Angeles 220-kv. transmission line. Preparatory work on the Los Angeles end of this line was started a short time ago.

Army Chief of Engineers Reports on Power Resources Survey

In his annual report to Congress on the survey of the electric power plants and resources of the United States that was commenced during the fiscal year 1922 the Army Chief of Engineers states that "it was desired by this means to obtain information and to develop plans which would enable the nation to utilize to the utmost all available electric power in time of war, and to assure the fairest and most efficient distribution to industries which would be engaged in work essential to the prosecution of hostilities."

He continues:

The objects of the survey are to collect data on existing power companies of over 5,000-kw. capacity; to establish contact with the principal men in the power-production business; to seek the co-operation of producers in so planning their extensions and new developments as best to meet war-time needs; to ascertain the possibilities of increased power development in combination with navigation improvement, flood control, or otherwise; and to ascertain the best system for the government to adopt for developing power resources and for administering power distribution in a national emergency. Especial emphasis is being laid on close co-operation with the large power producers and interests, as it is realized that only in this manner can a successful system be devised. Duplication of work done by other government bureaus is being avoided, and every effort is made to utilize existing data to the fullest extent practicable.

An initial survey of the situation for the entire continental United States has been completed, and a report based thereon was during the year transmitted to, and approved by, the Assistant Secretary of War. The plan contained in this report contemplates the division of the country, for peace-time investigation and war-time administration, into eleven territorial power zones. During peace-time, the necessary work and investigation in each power zone will be under a division or district engineer located therein. Annual reports will be submitted by these, and based thereon, the chief of engineers will transmit annually to the Assistant Secretary a project, revised up to date, for co-ordination and administration of power resources in an emergency.

Spirit Lake Company Files for Large Power Development

Two separate sets of applications filed at the state hydraulics office in November by Joseph Roane of Vancouver, Wash., and by R. B. Metcalfe, of Portland, Ore., both for the Spirit Lake Railway & Power Company, would develop water power in Cowlitz County at an estimated cost of $10,700,000, it was announced by R. K. Tiffany, supervisor of hydraulics.

Upon six independent sites for which filings were applied, a total of 121,600 continuous electrical horsepower would be developed, requiring from two to three years to build the plants on account of the large dams required and the extensiveness of the flumes, canals and power-house equipment.

The four largest units of the power project for the Spirit Lake concern were filed by Mr. Roane, whose projects would cost $7,700,000 and would develop 72,000 hp. All would take water from the Toutle River.

His applications apply in the first instance to the Roane unit which would cost $1,500,000 to develop and would furnish a total of 13,200 hp. A 30-ft. dam, 80 x 120 ft., fed by 600 sec.-ft. of water, would impound water for the first unit. The second would be known as the Elk Rock project and would be built at a cost of $3,000,000, developing 29,000 hp. A 9-mile canal and a dam 15 ft. high and measuring 200 x 275 ft., would be required in this case. Green Canal, third of the projects, would cost but $700,000, and would furnish 6,800 hp., utilizing a dam 15 ft. high and 250 x 300 ft. in size. Also calling for a 9-mile canal and the completion of a 250 x 300-ft. dam is the Alder project outlined by Mr. Roane. This plant would cost $2,500,000 to complete, furnishing 23,000 hp.

The filings for the company by Mr. Metcalfe would expend the sum of $3,000,000 in the development of two power sites furnishing a total of 49,600 hp.

These two applications, following a reservoir permit already granted to the Spirit Lake Railway & Power Company, of which Mr. Metcalfe is president, would use 10,000 sec.-ft. from joint intakes off the Green River and Hoffsteadt Creek, and in the second application would appropriate 500 sec.-ft. from the Toutle River, of which the two streams in the first application are tributaries.

Two dams are needed in the first of the applications, the Green River dam specifications calling for a concrete dam 75 ft. high, with bottom and top measurements of 80 and 140 ft., respectively. The Hoffsteadt Creek dam would be 40 ft. high with a top length of 110 ft. and 50 ft. at the base. The Toutle River dam, necessary in the second project outlined in the applications, would have a height of 8 ft. with a length along the top of 250 ft. and be 125 ft. at the base. A total fall of nearly 1,100 ft. would be utilized in the two projects, it was represented in the applications. The Toutle River plant would contribute 15,000 hp., as compared to the total output of 34,600 hp. from the combined hydroelectric apparatus to be installed on Hoffsteadt Creek and Green River.

It was stated that the power generated would be used for mining, lighting, transportation and general utility purposes.

John B. Fisken presenting Insull Medal to Howard Dynan, of Copco.

Fisken Makes Insull Award to Copco Employee

Answering in the affirmative the Biblical query, "Am I my brother's keeper?" John B. Fisken, consulting engineer, The Washington Water Power Company, Spokane, in his capacity of Northwest representative on the accident prevention committee, Technical National Section, N.E.L.A., in awarding the Insull Medal to Howard Dynan, foreman of line gang of the California Oregon Power Company, showed beyond all question the duty people owe one another in worthwhile works of safety.

The Insull Medal was presented to Mr. Dynan for saving the life of a fellow employee, Burt T. Green, who had received an electric shock while working on a switch structure at the West Side plant of the company, Klamath Falls, Ore., June 3, 1925. (Journal of Electricity, Dec. 15, 1925, p. 465.)

In making the award, Mr. Fisken concluded with the following remarks:

This, Mr. Dynan, is a token of the appreciation of a grateful industry; may you live long to enjoy it and may you never again be placed in the position where you can merit another reward, but if you are, may your efforts meet with a like measure of success.

This medal and this certificate are presented to you as a reward, but the greater reward I feel sure will be found in the knowledge that you have fulfilled your obligation as your "brother's keeper," and that through your act a brother man continues to live in the enjoyment of his wife's smile and his children's laughter.

Peace has its victories no less than war; we honored the brave boys who went "over there" for the purpose of destroying lives, those of our country's enemies. We should equally honor the man who applies his bravery, his coolheadedness and his acquired knowledge not to destroying life but to preserving it.

Boulder Dam 300 ft. High Is Recommendation of Merrill

With the avowed intention of attempting to put through the Swing-Johnson bill at this session of Congress various members of the Senate Committee on Irrigation and Reclamation opened public hearings on the first day of Congress. The first witness was O. C. Merrill, the executive secretary of the Federal Power Commission. His testimony was confined almost entirely to the discussion of the height of the dam in Boulder Canyon that would be best suited to the development of power and at the same time contribute to flood control. Mr. Merrill is to be recalled to present a plan for financing the project. He is opposed to the Swing-Johnson bill, but in case Congress should approve federal participation he has worked out a plan whereby the federal government can lend its credit to the project without withdrawing money from the treasury.

Mr. Merrill told the committee that the Boulder Dam should exceed 300 ft. in height by as few feet as could be agreed upon to prevent excessive loss of water by evaporation. A dam 300 ft. high would confine the reservoir to the canyon itself. Under such conditions evaporation losses would be less than 100,000 acre-ft. per annum. If the dam were built to the maximum height proposed, evaporation losses from a broad shallow reservoir would be as much as 700,000 acre-ft., which would mean the loss of enough water every year to irrigate 200,000 acres.

Portland Electric Power Company Issues House Organ

A new arrival among the utility-company house organs or employees' magazines is that of the Portland Electric Power Company, Portland, making its first appearance with the November, 1925, issue. This issue is a 16-page magazine, 7½ x 10½ in., containing special articles and departmental material. It is to be published monthly entirely by regular employees of the company, with Fred L. Brace, editor, and George J. Kelly, business manager. Associate editors listed are: Marguerite Butler, Gladys Robinson, Harry P. Cramer, A. H. Kruel, Gordon Steele and O. C. Burbott. As yet it has not been named, there being a prize of $25 offered to the employee submitting the best title.

The first issue contains articles by Franklin T. Griffith, president, A. C. McMicken, sales manager, and William Strandborg, editor of "Watts Watt," a company publication circulated on its street cars. Departments include "The Family Wash," "The Women's Page," "What's Doing in Our Stock Yard," "Keeping Up," "Just Between Us," "Sports," and "Shear Nonsense." An excellent view of the Oak Grove development of the company adorns the front cover.

New 44-kv. Transmission Line to Half Moon Bay

Application was made recently to the Railroad Commission by the Great Western Power Company of California for permission to construct a new 44-kv. transmission line in San Mateo County, Calif. This line is to extend from a connection with the San Francisco system of the company at the northern line of San Mateo County some twenty-two miles to Half Moon Bay.

Construction work is planned to start immediately, and the line is expected to be ready for operation some time in April. Initial construction will provide for an ultimate of two lines on a single pole line. Only one line will be strung at first. The total length of the line is to be 22 miles. Plans call for the erection of 19 miles of steel poles and 3 miles of wood poles. Coincident with the erection of the transmission line is to be the construction of two substations. One of these substations will be an 11/44-kv. step-up station at the San Francisco end of the line and the other will be a 44/11-kv. step-down station at the southern end of the line. Total cost is expected to be in the neighborhood of $160,000.

Load growth in the Half Moon Bay section made necessary the construction of a second line feeding into this territory. The new line will provide an additional transmission capacity of 5,000 kva. for the region. This will suffice for the present, and when the load demands the second circuit will be strung on the same pole line.

New 110-kv. Line Planned From Tekoa, Wash., to Kellogg

Construction of about 67 miles of 110-kv. transmission line from Tekoa, Wash, to Kellogg, Idaho, has been undertaken by The Washington Water Power Company of Spokane, Wash., replacing the present 60-kv. No. 2 Coeur d'Alene line of that company. The new line will follow a new right-of-way from a connection on the present transmission line of the company south of Spokane to Chatcolet, Idaho. From there it will be built on the same right-of-way to Kellogg, Idaho.

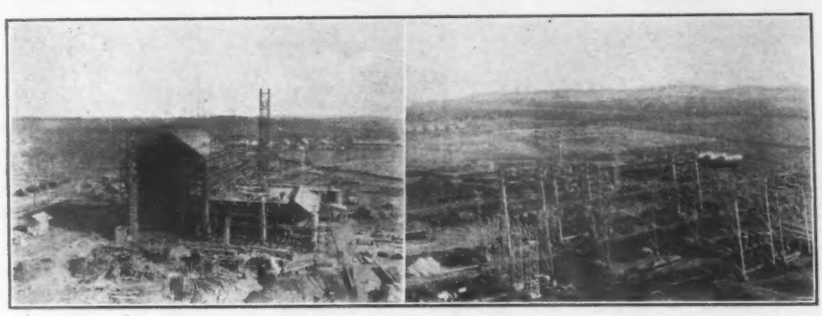
Two-pole construction will be used and the line entirely rebuilt. When this line is built and a seven-mile stretch in the Coeur d'Alene district is replaced, the entire transmission system from the Long Lake power station will be operated at 110 kv. better to serve the large silver-zinc-lead district of the Idaho panhandle. The new plan when completed will give the company transmission lines of 110 kv. from the most extreme eastern and western limits of its territory.

San Diego Company Opens Office in La Mesa District

Opening of the new La Mesa district office of the San Diego Consolidated Gas & Electric Company, San Diego, Calif., Dec. 15, was announced by A. E. Holloway, superintendent of the commercial department. The new office will serve the districts of La Mesa, La Mesa Heights, Grossmont, Spring Valley, Jamacha and Lemon Grove, with E. R. Hollingsworth as district representative.

A feature of the La Mesa branch will be a permanent display of electric ranges, water heaters and other domestic appliances.

With the object of bringing the company and its rural customers into a more personal relationship, branch offices are being established as rapidly as volume of business and community growth permit. The company now maintains district offices at Oceanside, Escondido, Coronado and La Jolla, Calif.

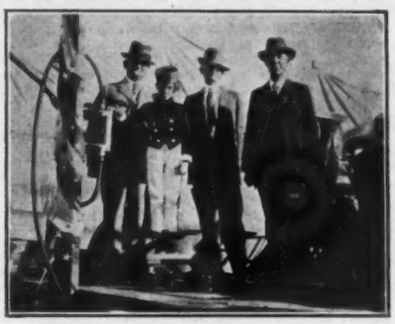


The new Contra Costa 110-kv. substation of the Pacific Gas and Electric Company, as it appeared Dec. 9, 1925

"Busy Buttons" Turns on Street Lights at Fillmore

Celebrating the turning on of the newly installed ornamental street-lighting system of more than 100 standards on its main streets, the citizens of Fillmore, Calif., on Dec. 11 staged a unique entertainment which took the shape of an old-timers' parade. Old lanterns of every description and vintage were used to illuminate a grand parade and carnival which took place prior to the actual turning on of the current. Practically everyone in the city of Fillmore, together with invited guests from all over Ventura County, participated in the old-timers' parade.

Lanterns, lamps and even old-fashioned candleholders that had not seen the light of day for two generations



"Busy Buttons", in the person of little Miss Alice Keiffer, turns on the street-lighting system in Fillmore, while G. E. Gaylord, division superintendent, Southern Pacific Company, C. Arrasmith, city manager, and W. H. Price, mayor of Fillmore, look on.

were brought out and polished up for the occasion. All other lights had been turned off while the parade passed through the streets, and at a prearranged signal "Busy Buttons"—little Alice Keiffer, daughter of Robert Keiffer, manager of the Southern California Edison Company's Fillmore branch—threw the switch, which by a prearranged signal, flooded the streets with light in startling contrast to the futile glimmerings of the ancient lamps and lanterns.

L. S. Lothridge, manager of the Southern California Edison Company's Santa Paula district, which includes Fillmore, threw his entire organization into the work of making the electrical features of the party function properly. E. M. Husher, superintendent of the Santa Paula district of the Edison company, and R. S. Woods, of the substation maintenance department, planned the hookup of the dummy switch and the necessary signal system which enabled "Busy Buttons" to light up the entire town with one move.

Fire Destroys Power Plant in Akron, Colo.—Akron, Colo., recently was without power and lights for several days as a result of an explosion and fire which practically destroyed the power plant of that city. Peter Yost, chief engineer, and Arthur Raymond, fireman, were injured in the explosion but recovered. Work was under way cleaning carbon out of one of the engines when the explosion occurred, but the exact cause of the blast was undetermined. Total damage was estimated at $50,000.

Federal Company to Construct Cowlitz River Project

A large hydroelectric power plant on the Cowlitz River in Washington will be constructed by the Federal Light & Traction Company, parent company of the Grays Harbor Railway & Light Company of Aberdeen, Wash., according to announcement of W. W. Briggs, general manager of the Grays Harbor company. Work will be started on the new plant as soon as the necessary permits are granted by the state supervisor of hydraulics.

The first unit of the plant at Mayfield, Wash., will develop 38,000 kw., and when the complete development is effected, the total output will be 100,000 kw. This power will be brought from the Cowlitz River to Grays Harbor and will be available to Aberdeen, Hoquiam and Cosmopolis on Grays Harbor, and to Raymond and South Bend on the Willapa Harbor and adjacent territory. Immediate development work is expected to cost $2,500,000. The work is planned in three units, the second, which will be known as the Mossy Rock Unit No. 2, will consist of a dam 300 ft. high in Young's Canyon, tunnel, pipe line and power house just below, and a lake 15 miles long, with ultimate capacity of 84,000 kw.; the third unit will be the Big Bend Unit, which will develop 30,000 kw. (Journal of Electricity, Aug. 15, 1925, p. 147.)

Portland Lighting System Makes Downtown Bright Spot

Pictures showing the contrasting street lighting under the old and new systems of street illumination were made recently in Portland upon the completion and turning on of a new street-illumination system on Broadway of that city. Views were photographed at night both before the new lighting system had been turned on, and again at one minute after the new system had been illuminated. The accompanying illustrations show plainly the relative illumination of the street, the crowds who witnessed the ceremony of turning on the new system being plainly visible on the streets.

The new system in Portland along Broadway is arranged to place six standards to the block, three on each side of the street, placed in parallel, a total of 106 for the seventeen blocks of the lighting district. Each standard contains two units of 15,000 lumens each, giving an average intensity of 2.85 foot-candles on the pavement and 665 lumens per linear foot of street. (Journal of Electricity, Aug. 15, 1925, p. 148.)

The pictures were taken by W. C. Foster, assistant operating engineer, Portland Electric Power Company, which received the contract for the installation and operation of the system for five years. Jagger, Sroufe Company, electrical contractors, Portland, installed the system under a subcontract.

Opposition to Jacobs Bill Shown in Legislative Session

At the legislature now in session in Olympia, Wash., public ownership was hit twice recently when the house public utilities committee recommended the indefinite postponement of the Jacobs Bill, which would allow municipal light plants to sell current outside the city borders, and at the same time recommended for passage the Trunkey Bill, which would require the city of Seattle to submit bonds to the voters before building another unit of the Skagit. The Trunkey Bill was recommended for passage by a vote of seven to four, after three Seattle councilmen had urged its defeat.

In the face of the adverse decision, Representative B. F. Jacobs amended his power bill to take in additional territory, and announced that he would carry his fight to the floor of the house in the form of a minority report signed by himself and E. E. Halsey, chairman of the committee.

The Municipal League of Seattle recently voted opposition to the Jacobs Bill.

Two Power Employees Overcome in Mine Disaster in Colorado

In the mine fire and threatened disaster near Nederland, Colo., early in December that entombed twenty-eight men underground for nearly twenty-four hours, a number of employees of the Public Service Company of Colorado served with the rescuers.

Headed by F. S. Henderson, local manager of the company at Boulder, a crew went to the mine soon after the fire was reported and attempted to restore power service after the flames had consumed the mine power plant and the company's transformer station maintained at the mine. Wayne Potts and August Riche, employees of the company, were overcome while engaged in rescue work but were brought to the surface in time and later recovered.

Before and after. Left: Broadway, Portland, Ore., looking south from the Electric Building, corner of Alder Street, a few nights before the new ornamental lighting system was turned on. Right: One minute after the lights were turned on, Nov. 24, showing crowds assembled to witness the ceremony.

Interior Mexican Town Installs Modern Power Plant

In the heart of old Mexico has been installed recently one of the most modern and complete generating stations of small size, supplying light and power to a rapidly growing town of 10,000 inhabitants, according to the Westinghouse Electric & Manufacturing Company. The installation is that of the Cia de Hielo y Luz Electrica de Panuco, S. A.

The operating company was formed recently by Panuco citizens to furnish light and power to the community, hitherto practically without electric service. The installation consists of two turbo-generators of 500-kw. combined capacity, delivering three-phase,

A view of one of the two generating units of the Mexican company with C. Ruiz, manager, alongside. All pipes and conduits are underground.

60-cycle, 2,400-volt power. The generators are driven by the latest type turbine running under 200 lb. steam pressure, 100 deg. superheat, and discharging into surface condensers under a vacuum of 28 in. of mercury. Operating speed of the generators is 900 r.p.m.

The plant is located ideally at the edge of the River Panuco, from which circulating water is obtained by pumps placed in a 50-ft. concrete pit, the latter being necessary to compensate for the varying water level during the extreme seasons. During flood periods the level of the river frequently rises to within a few feet of the concrete foundation of the plant, when the pumps operate under a considerable head.

B. C. Electric Railway Company Rates Cut 60 Per Cent

Announcement has been made by W. G. Murrin, vice-president of the British Columbia Electric Railway Company, Vancouver, that, effective Dec. 1, the following new power and light rates have been put into force:

"The first 65 kw-hr. per month per horsepower will be three cents per kw-hr.; the next 65 kw-hr. per month per horsepower will be two cents per kw-hr.; and the remainder one cent. Even on these rates there will be a discount for installations of over five hp., which will materially reduce the first, or three-cent, step. The existing rate for small-power installations is five cents per kw-hr., dropping to two cents after a certain consumption, irrespective of the size of the installation. The same principle will be put into effect in our new commercial lighting rates and in a similar way in our domestic lighting rates."

Separate Company for Western Electric Supply Business

Under the name of Graybar Electric Company the electrical supply business carried on by the Western Electric Company has been set apart from the telephone manufacturing business and incorporated. The Western Electric Company has been both the manufacturing company of the Bell System and a distributor of electrical supplies. The new corporation is the result of the fact that both those lines of business require specialized organization and specialized management and that the rapid expansion of the supply department made an entirely separate corporate identity necessary.

The name "Graybar" is derived from Gray & Barton, a partnership formed in 1869 between Elisha Gray and Enos M. Barton for the purpose of manufacturing electrical equipment, and the predecessor of the Western Electric Company.

The Graybar Electric Company will continue the sale of all devices and materials which constituted its business under the Western Electric name and will continue to market equipment of Western Electric manufacture, such as telephone train dispatching apparatus, intercommunicating telephone systems, lead-covered cable and similar material.

The new company has fifty-five distributing houses in important cities, one of the largest being that in San Francisco at 680 Folsom Street, of which W. S. Berry is manager.

A more complete account regarding the formation of the Graybar Electric Company will appear in the Jan. 15 issue of the Journal of Electricity.

San Francisco Electrical League Holds Kiddies Day

The annual Kiddies Day party of the San Francisco Electrical Development League was held Monday, Dec. 21, at the Palace Hotel. A total of 105 youngsters from the poorest families in San Francisco were selected by the Salvation Army to attend the party as the guests of the League. Members of the League, their wives, sisters and women friends played the part of parents of each of the youngsters on this day.

E. G. McCann acted as chairman in the absence of C. B. Kenney, president of the League. The program was broadcast over KPO, and several of the stars assisted in the entertainment, including Big Brother, Gypsy and Marta; Mrs. Crowe, director of KPO programs was also present. Howard Milholland of KGO led the community singing. Santa Claus distributed gifts to all of the youngsters.

The League supplied the Salvation Army with money to buy the youngsters clothing and presents; the clothing was distributed before the party. A sightseeing bus was used to transport the youngsters to and from the hotel.

The following committee was in charge of the party: chairman—Arthur Rowe, Garnett Young & Company; vice-chairman, E. G. McCann, Pacific Gas and Electric Company; A. H. Nicoll, Western Electric Company; R. MacDonald, Fobes Supply Company; Victor Lemoge; C. D. Slaughter, Allied Industries, Inc.; Fred Todt, Pacific States Electric Company; Charles Musladin, Alexander & Lavenson Electrical Supply Company; R. St. John, Simonson and St. John; Arthur Dahl, Chas. W. Dahl and Son; J. T. Stewart, Stewart Electrical Manufacturing Company; L. Leurey; Clyde Chamblin, California Electrical Construction Company; Don Ray, Pacific Gas and Electric Company; E. E. Browne, Electrical Contractors and Dealers' Association, and George Barker, Allied Industries, Inc.

Committee Organization Rocky Mountain Division N.E.L.A.

The committee organization of the Rocky Mountain Division of the National Electric Light Association, as of Jan. 1, 1926, is announced as follows:

President—C. A. Semrad, Public Service Company of Colorado, Denver.

General National Committees

Educational—W. N. Clark, Southern Colorado Power Company, Pueblo.
Insurance—D. E. Bent, Tucumcari Light & Power Company, Tucumcari.
Membership—George E. Lewis, Public Utility Information Committee, Denver.
Rural Electric Service—F. F. McCammon, Public Service Company of Colorado, Denver.
Wiring—S. W. Bishop, Electrical League of Colorado, Denver.

Accounting National Committees

Section Chairman—J. E. Loiseau, Public Service Company of Colorado, Denver.
Vice-Chairman—W. J. Benning, Southern Colorado Power Company, Pueblo.
Accounts Payable—B. L. Wiles, Albuquerque Gas & Electric Company, Albuquerque.
Accounts Receivable—F. C. Scott, Southern Colorado Power Company, Pueblo.
Classification of Accounts—John Connell, Public Service Company of Colorado, Denver.
Fixed Capital—W. J. Benning, Southern Colorado Power Company, Pueblo.
Purchasing and Storeroom—H. P. Tewksbury, Public Service Company of Colorado, Denver.
Statistical Methods—E. E. Sherman, Public Service Company of Colorado, Denver.

Commercial National Committees

Section Chairman—J. A. Clay, Western Colorado Power Company, Durango.
Vice-Chairman—G. B. Buck, Public Service Company of Colorado, Denver.
Cooking and Water Heating—W. E. Fleetwood, Western Colorado Power Company, Telluride.
Customer Relations—H. E. Hartzell, Public Service Company of Colorado, Boulder.
Industrial Lighting—C. E. Addie, Public Service Company of Colorado, Denver.
Merchandising—G. B. Buck, Public Service Company of Colorado, Denver.
Power—L. C. Moore, Southern Colorado Power Company, Canon City.

Public Relations National Committees

Section Chairman—W. C. Sterne, Municipal Properties Investing Company, Denver.
Vice-Chairman—J. J. Cooper, Mountain Electric Company, Denver.
Co-operation with Educational Institutions—Herbert S. Sands, Westinghouse Electric & Manufacturing Company, Denver.
Customer Ownership—Guy W. Faller, Public Service Company of Colorado, Denver.
Industrial Relations—V. L. Board, Public Service Company of Colorado, Denver.
Information Bureau Organizations—J. J. Cooper, Mountain Electric Company, Denver.
Public Speaking—A. C. Cornell, Western Electric Company, Denver.
Relations with Financial Institutions—E. A. Phinney, Jefferson County Power & Light Company, Golden.
Women's—Miss Inez E. Thompson, Public Service Company of Colorado, Denver.

Technical National Committees

Section Chairman—H. H. Kerr, Public Service Company of Colorado, Denver.
Vice-Chairman—W. D. Johnston, Mountain States Power Company, Casper.
Accident Prevention—F. A. Tewksbury, Public Service Company of Colorado, Denver.
Electrical Apparatus—H. H. Burt, Public Service Company of Colorado, Denver.
Hydraulic Power—L. Y. Sears, Public Service Company of Colorado, Denver.
Inductive Co-ordination—Ralph Hubbard, Public Service Company of Colorado, Denver.
Meter—William Quandt, Southern Colorado Power Company, Pueblo.
Overhead Systems—G. Brannan, Cheyenne Light, Fuel & Power Company, Cheyenne.
Prime Movers—R. F. Throne, Public Service Company of Colorado, Denver.
Underground Systems—M. M. Koch, Public Service Company of Colorado, Denver.

News Briefs

Lumber Mill to Be Electrified Completely.—The Bloedel-Donovan Lumber Mills, Bellingham, Wash., according to statement of J. H. Bloedel, president, will be electrified completely at once. The work will cost about $75,000 and require two and a half months. Half of the mill was electrified ten years ago.

Utah Power & Light Company Buys Green River Utility.—The steam electric plant and distribution system of the Green River Electric Light & Power Company at Green River, Wyo., has been purchased by the Utah Power and Light Company. Approximately 600 customers now are receiving service from this plant.

Denver Trying Out Electric Traffic Signals.—Additional sample installations of electric traffic signals have been made in Denver. Six different makes of signals now are being tried out. An appropriation of $50,000 has been made in the city's budget for next year covering the purchase of a suitable system.

Denver to Remodel Park Electric Fountain.—The electric fountain which has proved one of the chief attractions to summer visitors in the City Park of Denver is to be remodelled. Most if not all of the interior pipe and wire installation located under the fountain in a big lake will be replaced, according to Eli M. Gross, superintendent of parks.

California Oregon Power Company Authorized to Issue Stock.—The California Oregon Power Company has been authorized by the California Railroad Commission to issue on or before Dec. 31, 1926, $1,000,000 of its six per cent cumulative preferred stock, to be sold at not less than 92 per cent of par value, and to use the proceeds for construction purposes and reimbursing applicant's treasury.

Puget Sound Company Applies for Power and Light Franchises in Kitsap County, Wash.—The Puget Sound Power & Light Company, Seattle, has made application for power and light franchises in Kitsap County, Wash., which will permit of bringing in power from the new Baker River plant. It is proposed to cross Puget Sound with the power line and enter Kitsap County near the northern boundary. It is declared the move is a first step to furnish Bremerton and the Puget Sound Naval Yard there with the company's power service.

Two Transmission Line Licenses Issued by Commission.—A license has been issued by the Federal Power Commission to the California Oregon Power Company of San Francisco covering a 34,000-volt transmissions line to serve the Victory Gold Mines in the Klamath National Forest. That body also has issued to The Washington Water Power Company of Spokane a license for a 110-kv. transmission 163 miles long to extend from the company's Long Lake power house to its Brewster substation. This company also has applied for a license to cover a transmission 5.70 miles long in the Coeur d'Alene National Forest.

P.C.E.A. News

Meeting Schedule of Technical Section Conclave Issued

The schedule of meetings of the conclave of the Technical Section of the Pacific Coast Electrical Association, that is to be held at the Fairmont Hotel, San Francisco, Jan. 13-15, has been announced by R. R. Cowles, chairman, as follows:

Committee	Wed. Jan. 13	Thurs. Jan. 14	Friday Jan. 15
Accident Prev'tn.	10 a.m.	9:30 a.m.	
Elec. Apparatus		9:30 a.m.	9:30 a.m.
Hydraulic Power	10 a.m.	9:30 a.m.	
Inductive Co-ord'n			9:30 a.m.
Meters	10 a.m.	9:30 a.m.	
Overhead Sys.	10 a.m.	9:30 a.m.	
Prime Movers	10 a.m.		
Safety Rules			9:30 a.m.
Underground Sys.			9:30 a.m.
Executive Com.	6 p.m.		4:00 p.m.
Luncheon		12:15 p.m.	
General Meeting			8:00 p.m.

Reservations for accommodations should be made direct with the hotel, with mention of the Pacific Coast Electrical Association.

Detroit Accident Prevention Meetings Outlined

By J. M. BUSWELL
Chairman Accident Prevention Committee
P. C. E. A.

Ten members of the accident prevention committee of the N.E.L.A., in addition to the chairman and the secretary, were in attendance at the Detroit meetings Oct. 8 and 9. Included in these was W. R. Frampton, who represented the chairman of the P.C.E.A. committee of like name and work. The prime object of this particular meeting was to review the work of the coming year.

Announcement was made to the effect that all reports of the Technical Section must be in headquarters by Feb. 22, 1926. This is necessary if these reports are to be in time for publishing prior to the annual convention at Atlantic City May 17-21, 1926. The chairman pointed out that this necesssitated the reports of the divisions of the accident prevention committee being in the hands of the chairman by Feb. 15.

Of particular interest to the Pacific Coast Division are the following specific subjects in which participation has been requested:

(a) Safe methods for construction or alterations and for operation of equipment.

(b) Grounding methods.

In addition it is of interest to note that the following subjects were assigned to the Pacific Coast Division at the national accident prevention committee meeting held in New York Sept. 15 and 16.

(c) Safe practices.

(d) Identification of cables.

(e) Accident prevention course for foremen.

While the Pacific Coast committee had taken up all of these subjects with the exception of grounding, a progress report was all that could be made in time for the national committee's Nov. 10 meeting. On this subject of grounding, the national committee already has been informed of the appointment of the joint committee on this subject which is to represent the safety rules, apparatus and overhead systems committees of the Technical Section, P.C.E.A. It is expected that this joint committee will co-operate with the national committee referred to, either directly or through the accident prevention committee of the P.C.E.A.

In the national committee discussions as well as in the discussions of the Pacific Coast committee there is found a general desire for the submission of suggested safe practices along various lines. For instance, a direct effort is to be made to obtain suggested safe practices for construction, installation and reconstruction, for fire-fighting, for grounding, tree-trimming, overcoming various steam-plant hazards, identification of cables, unloading and handling of poles, guarding excavations, truck operation, and for reducing various public hazards. It is hoped that every member of the Pacific Coast Electrical Association not only will feel free to assist the accident prevention committee by making suggestions relative to safe practices of which experience has indicated the necessity or desirability but will feel that it is his duty.

Synopsis of Meter Committee Detroit Meetings

By W. R. Frampton, representing R. G. Jones, Chairman Meter Committee, P.C.E.A.

No special reports were submitted at these meetings as they were primarily organization meetings. Some subjects were discussed tentatively and plans were made for the assignment of definite work to each of the geographical divisions. In the interests of economy brief and concise reports were urged by C. F. Hirschfield, chairman of the Technical National Section.

Twenty-two standing subcommittees have been arranged for. These are separated into divisions and each division is assigned a distinct part of the work of each subcommittee. The subcommittees are as follows:

1. Handbook for electric metermen.
2. Current for electricity meters.
3. Bureau of standards circular 56.
4. Ruling of regulatory bodies.
5. Educational work.
6. Meter and installation department.
7. Laboratory standards and testing instruments.
8. Methods of metering.
9. Metering accuracy.
10. Meter testng.
11. Auxiliary testing apparatus.
12. Low-tension installations.
13. High-tension installations.
14. Demand power factor and special meters.
15. Instrument transformers.
16. Switchboard meters, instruments and relays.
17. Transportation.
18. Meter standardization.
19. Meter problems.
20. Experimental and research work.
21. Publicity and publications.
22. New developments.

Northwest Electric Light & Power Association

Committee to Concentrate on Electric Water Heating

The energies of the electric cooking and heating committee for the current year will be devoted to contributing what it can with the means at its disposal to knowledge on the subject of electric water heating. This was decided at a meeting of that committee, Dec. 4, 1925, at Portland, where various possible subjects for study were discussed. It was found that the sale of electric ranges by member companies was pretty well standardized, and with a special committee working on the range survey in the Northwest it was felt that nothing of value could be contributed on this subject beyond what was common knowledge now and what would be disclosed by the final report of this survey.

In turning to the subject of water heating the committee recognized its limitations in the absence of funds with which to carry on a comprehentive test, but decided that through a study of existing loads and revenues derived therefrom by different companies some valuable conclusions might be reached with respect to certain phases of the subject.

Accounting Section to Hold a Group Meeting Feb. 1

The Accounting Section will hold a general group meeting in Portland, Feb. 1, 1926, to which all members are invited and at which certain subjects have been assigned for discussion as follows: inventories, credits, distribution records, simplified forms of annual reports, and adaptability of machines to accounts payable records and to payroll distribution. Each of these subjects is within the scope of study of a different subcommittee, and the plan is to have a member of the committee responsible for the subject present a paper on it to form the basis for further discussion.

This is the first such group meeting ever held by the Accounting Section between conventions, and it is expected that the material developing in it will form the basis for the reports of that section at the convention.

A.I.E.E. News

San Francisco Section will hold its next meeting Friday evening, Jan. 15, at 6 p.m. at the Fairmont Hotel. It will be a joint meeting with the technical section of the Pacific Coast Electrical Association. Following dinner, the regular meeting will convene at 7:30 p.m. "The Use of Modern Mechanical Equipment for Transmission-Line Construction" is the subject of a paper to be presented by J. A. Koontz, electrical engineer of the Great Western Power Company.

News of the Electragists

San Francisco Association to Hold Annual Banquet

The sixth annual banquet of the San Francisco Association of Electrical Contractors and Dealers will be held in the roof garden at the Hotel Whitcomb, Saturday, Jan. 16, 1926, at 6:30 p.m.

The following have been appointed on the committee in charge: chairman—Walter Mobley, American Electrical Engineering Company; Charles Shipman, Atlas Electric Company; Edward Dowd, Dowd-Seid Company; D. M. Carlson, Central Electric Company; and Gus Baraco, Old San Francisco Electric Company.

Tickets are $5 per plate and can be secured from any member of the committee or at the office of the Association, 522 Call Building, San Francisco. Reservations must be made not later than Tuesday, Jan. 12. A badge will be exchanged for each ticket as the guests arrive and this must be worn in order that those in attendance may go in and out of the hall.

Members of the electrical fraternity are invited to attend, and 300 are expected. Out-of-town visitors who plan to be present and desire rooms at the hotel are requested to make reservations through the committee or the Association.

California Electragists to Meet at Catalina in January.—The next quarterly meeting of the California Electragists, Southern Division, will be held at Catalina Jan. 23-24. W. F. Brainerd, California Electrical Bureau, and C. J. Geisbush, executive secretary of the Electragists, have been appointed as a committee to take care of the details of the convention. These will be announced in the Jan. 15 issue of the Journal of Electricity.

Walter Scott of Burlingame, one of the members of the committee on standardization of local ordinances of the California Association of Electrical Inspectors. This committee will report at the meeting of the Association to be held in San Diego in March.

Electrical Contractor-Dealers of Stockton Organize

In response to a letter sent to the electrical contractors and dealers of Stockton, Calif., by E. H. Grogan of the Stockton Plumbing Supply Company, representatives of eight different firms met in the headquarters of the Builders Exchange and formed an organization.

After disposing of the necessary preliminary business, the following officers were elected: president—George Taylor, Hild Electric Company; vice-president—G. Grider, Grider Electric Company; secretary—W. J. Collins; treasurer—E. H. Grogan, Stockton Plumbing Supply Company; trustees—Charles Bass, Commercial Electric Company; W. H. Murphy, Bright Spot Electric Company; E. Suplick, Eddy Electric Company.

Meyer's Electric Company, Coachella, Calif., has moved into a new store building recently completed by F. H. Meyers, the proprietor.

Morgan Electric Company, formerly at 1322 E. 14th Street, San Leandro, Calif., has moved into a new store at 1104 E. 14th Street. **L. E. Morgan** is manager of the firm.

W. J. Collins, 708 East Market Street, Stockton, Calif., secretary of the Stockton Contractors and Dealers' Association, recently has become a member of the California Electragists.

H. L. Miller Company, electrical contractors of Pasadena, Calif., has completed the installation of the electrical equipment for the broadcasting station KPSN of the Pasadena Star-News.

J. W. Lane of the **J. W. Lane Electric Company,** Long Beach, Calif., has just completed the wiring of a model home which is to be shown under the auspices of the Long Beach Press Telegram. The home is wired completely in every way and exceeds the Red Seal specifications.

Taylor Electric Company operated by **F. W. Taylor** has moved from its former location at 112½ North Spadra Street, Fullerton, Calif., to a new store at 118 Commonwealth. Mr. Taylor specializes in industrial installations and his slogan is "complete electrical installations for light, heat and power."

The Stolper Electric Company, H. L. Stolper proprietor, of Burbank, Calif., has just opened a new store. Mr. Stolper has been established as a contractor in Burbank for some time and his new retail establishment is a credit to the town. The formal opening was held on Nov. 14 and was attended by a large number.

H. H. Courtright and **Frank Thomas,** Valley Electrical Supply Company; **T. M. Robinson, E. E. Elzea,** Electric Motor Shop; **L. G. Jeffrey,** Electric Construction Company; and **George M. Rankin,** California Electrical Bureau, all of Fresno, were in attendance at the meeting of the California Electragists, Northern Division, held at Sacramento, Dec. 5.

Red Seal License Granted to the Electric League of Colorado

Coincident with the change in name to the Electrical League of Colorado on Nov. 1, announcement was made by the Electrical Co-operative League of Denver, Colo., at that time of the award to it of a license to operate the Red Seal plan. Denver is the twelfth city to be issued a license by the Society for Electrical Development and the only one thus far to qualify between St. Paul, Minn., and the Pacific Coast.

Following newspaper announcements of a news nature on Sunday, Nov. 1, about the Red Seal plan, the first application for a Red Seal home was made the following morning and will apply to a $30,000 residence to be built near Denver's first electric home. As a matter of interest it is reported that the applicant was one of the bidders for the electric home when it was exhibited over three years ago.

Newspaper advertising already has been started by the Colorado league on the Red Seal plan and literature outlining minimum wiring requirements will be available for distribution shortly, according to S. W. Bishop, manager of the League.

Weekly Meetings Being Held in San Diego to Discuss State Safety Orders.—Meetings for the purpose of discussing the Electrical Safety Orders of the Industrial Accident Commission are being held weekly over a period of two months by San Diego electrical contractors and the city inspection department. The decision to hold these meetings was reached following a meeting of the contractors, the inspection department, supply dealers, and representatives of the San Diego Consolidated Gas & Electric Company. The Orders have been adopted by San Diego as standard for all wiring done in that city. With all contractors making installations in uniform compliance with the State Safety Orders, inspection will be facilitated greatly.

C. B. Kenney, Ne Page, McKenney Company, San Francisco, was in Portland and Seattle on business lately.

L. C. Stoll, of the L. C. Stoll Electric Shop, Bakersfield, is president of the Electric Contractor's Security Alliance of that city and devotes a considerable part of his time to association activities.

Meetings

Lighting Committee Lunch Club Talk Launched Auspiciously

Simultaneously in meetings of the electric clubs of Oakland, Los Angeles and San Diego the special luncheon club talk on "Artificial Light," as prepared by the lighting committee, Commercial Section, P.C.E.A., was launched under auspicious circumstances Monday and Tuesday, Dec. 14 and 15. In each case large groups heard the talk, and declared it one of the best prepared and best presented efforts in its field of endeavor.

The lighting talk constitutes the major work of the lighting committee for the year's program. It was carefully prepared by the committee, headed by Clark Baker, assistant manager, Pacific Division, National Lamp Works, and chairman of the committee. Condensed into briefest and tersest possible form, the talk reviews the achievements of illuminating engineers in the control and use of artificial light. It is of an educational nature and has been prepared with the intention of having it presented at the leading luncheon clubs of the state by members of the lighting committee. After the luncheon clubs have heard the talk, its activity will be extended to such schools, clubs, and other organizations as desire it, and it probably will be broadcast over the radio.

The talk is accompanied by a demonstration of some of the uses of artificial light in medicine, industry, commerce, and the home. It takes into account the physical structure of the eye and the effect of light on it. Glare and gloom are shown to be dangerous, and the effect of poor light on school children is set forth dramatically. A specially constructed light box, built like a miniature stage, is used to make the demonstrations, the entire paraphernalia of the talk having been designed ingeniously to enable its easy portability from one town to another.

At the Oakland Electric Club the talk was given by Robert Prussia, Westinghouse Lamp Works, with Clark Baker, chairman of the committee, adding a few remarks at the conclusion. The talk was commended highly by members of the Electric Club at the conclusion of the demonstration, and co-operation was pledged to get the talk placed before all the luncheon clubs of the East Bay communities.

In Los Angeles Dr. Arthur Hoare, professor of applied optics of the Los Angeles School of Optometry, gave the lighting committee talk to the Electric Club. C. A. Sanborn, of Holmes and Sanborn, construction engineers of Los Angeles, was chairman of the day, acting in the place of William Baurhyte, who was absent on account of illness.

G. H. P. Dellmann, lighting sales engineer, San Diego Consolidated Gas & Electric Company, gave the talk to the San Diego Electric Club, on Tuesday, Dec. 15, to a good crowd. Mr. Dellmann is scheduled to give the talk to the Rotary Club of San Diego in January, and plans to repeat it to the other luncheon clubs of the southern part of the state.

The San Francisco Electrical Development League is to hear the talk at its Jan. 4 meeting, program arrangements having made it impossible to hear the talk there simultaneously with other electric clubs of the state.

Seattle Engineering Societies Hold Joint Meeting.—A joint meeting of the Seattle sections of the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers and American Institute of Electrical Engineers was held in Seattle Dec. 15 at the Chamber of Commerce Auditorium. The principal address was on "The Skagit Power Project," and the speakers were Joseph Jacobs, Stirling B. Hill and W. C. Morse, engineers who were members of the Skagit Engineering Commission. An informal banquet and program of entertainment were provided.

Mountain States Auditors Meet.—District auditors of the Mountain States Power Company, representing the states of California, Oregon, Washington, Idaho, Montana and Wyoming held a two-day session at the general headquarters of the company in Tacoma, Wash., Dec. 17 and 18. The meeting was primarily for the purpose of discussing accounting methods and devising systems that will facilitate the accounting of the various branches of the company. Those who attended the meeting included E. Rosenauer, Stockton, Calif.; B. E. Lee, Albany, Ore.; A. S. Blanchard, Marshfield, Ore.; C. C. Clare, Tillamook, Ore.; E. A. Nelan, Casper, Wyo.; F. B. Marshall, Kalispell, Mont.; D. M. Shreve, Sandpoint, Idaho; C. E. Lesher, Everett, Wash.; Martin Sands, D. V. Johnson, Harry Anderson and W. L. Fitzpatrick, all of Tacoma.

Gavel Presented to Seattle Electric Club.—At a recent meeting of the Electric Club, a gavel, manufactured in the plant of the A. G. Manufacturing Company, was presented to the presiding officer, David M. Roderick. "Drew" Griswold and the A. G. company were the donors, and Harry J. Martin, past president of the club, made the presentation speech. The gavel, made of fiber and brass, bore the name of the club's president, and hereafter each presiding officer's name will be engraved on the gift.

COMING EVENTS

Technical Section, P.C.E.A.—
Conclave—Fairmont Hotel, San Francisco
Jan. 13-15, 1926

California Electragists, Southern Division—
Quarterly Meeting at Catalina, Calif.
Jan. 23-24, 1926

Rocky Mountain Division, N.E.L.A.—
Section and Committee Conference
Idaho Springs, Colo.
Jan. 25-26, 1926

Western Association of Electrical Inspectors—
Chicago, Jan. 26-28, 1926

National Association of Railroad and Utilities Commissioners—
Kansas City, Baltimore Hotel
Feb. 9-12, 1926

Accounting Section, Northwest Electric Light and Power Association—
General Group Meeting, Portland, Ore.,
Feb. 1, 1926

American Institute of Electrical Engineers—
Midwinter Convention in New York
Feb. 8-12, 1926

Electrical Men of Colorado—
State-wide meeting under sponsorship of Electrical League of Colorado
Denver, March 26, 1926

Pacific Coast Electrical Association—
Annual Convention—Biltmore Hotel, Los Angeles
June 8-11, 1926

Change Plans on Rocky Mountain N.E.L.A. Meeting

Instead of the usual midwinter meeting of the N.E.L.A., Rocky Mountain Division, a section and committee conference will be held at Idaho Springs, Colo., Jan. 25 and 26. Previous meetings have been held jointly with the Colorado Public Service Association and the Rocky Mountain Committee on Public Utility Information in Denver.

This year Charles A. Semrad, president of the Rocky Mountain Division, and the members of the executive committee arranged the two-day conference in the hope of crystallizing division policies and developing a definite program, especially along commercial lines.

The meeting will be held at the Hot Springs Hotel and the program shows morning, afternoon and evening sessions, without any scheduled entertainment. The officers hope to have representatives from all of the leading central stations in the Mountain section attend the conference which, for the first time, will feature consecutive reports of all sections and committees rather than concurrent meetings where interest would be divided.

Arrangements are being handled by J. A. Clay, chairman Commercial Section; J. E. Loiseau, chairman Accounting Section; H. H. Kerr, chairman Engineering Section; W. C. Sterne, chairman Public Relations Section, and O. A. Weller, division secretary.

Both Messrs. Semrad and Sterne attended the recent national executive committee meeting of the N.E.L.A. in Chicago and will make a report of the matters considered at that meeting.

Book Reviews

ELECTRICITY AND THE STRUCTURE OF MATTER

By L. SOUTHERNS, M.A., B.Sc. Lecturer in Physics in University of Sheffield. 7 x 5 in. 123 pages. 33 Figures. Cloth. $1. Oxford University Press, American Branch, New York, N. Y.

The volume is one of a series of introductory works prepared for the general education of the reader. It is written in a simple style and in the first part deals with the history of the discovery of an experimentation with electricity. With this general background the author goes into the application of electricity, giving many of the interesting uses of this form of energy.

While of a non-technical nature the work is suitable as a basis for an elementary understanding of the broad field which it covers. The book should prove interesting to the reader seeking a general idea of some of the facts concerning the application of electricity.

Personals

Howard A. Lewis, well known to electrical men as one of the outstanding leaders in the field of electrical appliance distribution, has announced his resignation from the McGraw-Hill Company to become director of sales of the Electric Refrigerating Corporation. This is the new holding company that will effect the combination of the Kelvinator Corporation and the Nizer

HOWARD A. LEWIS

Corporation, both leading manufacturers of electric refrigerators of Detroit, and the Grand Rapids Refrigerator Company. Mr. Lewis for eight years has been manager of "Electrical Merchandising," and as such has been a close student of the domestic electrical appliance market and a pioneer thinker in the problems of distribution and resale. In his new affiliation he becomes one of the foremost figures in the organization of this rapidly expanding branch of the appliance industry. Mr. Lewis entered the electrical industry on the Pacific Coast when, just out of Leland Stanford University in 1910, he joined the old Pacific Electric Heating Company of Ontario, Calif., later known as the Hotpoint Electric Heating Corporation. In 1911 he went East in charge of the New York district of the company. In 1914 he opened a London office and organized the European business. In 1915 he returned and took over the Chicago office in addition to New York, to which later was added the Canadian company, so that his territory embraced everything East of the Rockies. With the consolidation of the Hotpoint and Hughes organizations to form the Edison Electric Appliance Company in 1917, Mr. Lewis joined the McGraw-Hill Company, seeing an opportunity to give his energies to the promotion of the better merchandising of electrical appliances at a time when the true possibilities of the market were just beginning to dawn on the manufacturing world. From that time to this he has been one of the shrewdest analysts of the economics of electrical distribution and one of the most outspoken advocates of efficient resale practice, addressing many audiences and writing many papers on aspects of the problem. During 1919 Mr. Lewis was also business manager of "Electrical World."

F. V. Lindsey has been appointed sales manager of resistance materials by the Driver-Harris Company, Harrison, N. J. Mr. Lindsey has been identified with the manufacture of nickel and nickel alloys for a great many years, having been vice-president and secretary of the Electrical Alloy Company previous to its purchase by the Driver-Harris Company.

C. F. Phillips has been appointed representative in charge of the Wilkes-Barre office of the Allis-Chalmers Manufacturing Company. Mr. Phillips, who was formerly connected with the Philadelphia office of the company, succeeds Guy V. Woody.

Lafayette Hanchett was re-elected president of the Utah Power & Light Company at the annual meeting of the board of directors held in the general offices of the company in Salt Lake City Dec. 3. In addition **D. C. Green** was re-elected vice-president and general manager; **J. F. MacLane,** vice-president and general counsel; **George B. Thomas,** secretary and treasurer; **R. H. Jones,** assistant secretary and treasurer. **Church P. Castle,** who has been prominently identified with business activities in Salt Lake City and the Intermountain territory during the past fifteen years, and is a director of the National Copper Bank, was elected to the company's directorate.

George E. Quinan, chief engineer of the Puget Sound Power & Light Company, Seattle, recently addressed the Electric Club of Seattle on "The Growth of Electricity in the Puget Sound District."

F. F. McCammon, head of the power sales department of the Public Service Company of Colorado in Denver, has been named head of a committee appointed to report upon the relative merits of the various traffic signal systems, samples of which are now being demonstrated in Denver.

Lewis A. Lewis, sales manager, The Washington Water Power Company, Spokane, in his capacity as president of the Northwest Electric Light and Power Association and a member of the executive committee of the National Electric Light Association, made a trip to Chicago in order to attend a meeting of the executive committee recently.

J. B. Fisken, consulting engineer, The Washington Water Power Company, Spokane, recently addressed seventy-five employees of the Mountain States Power Company, Albany, Ore., on the subject of accident prevention and resuscitation. On the following day he talked to 500 engineering students and faculty members of the Oregon Agricultural College, Corvallis, Ore., on the same subject.

A. C. McMicken, sales manager, Portland Electric Power Company, Portland; **L. A. Lewis,** sales manager, and **L. R. Gamble,** assistant engineer, The Washington Water Power Company, Spokane; **J. F. Orr,** sales manager, and **F. J. Rankin,** chief engineer, Idaho Power Company, Boise; and **P. M. Parry,** commercial manager, and **R. M. Blake,** superintendent merchandise sales, Utah Power & Light Company, Salt Lake, attended the recent meeting of the cooking and heating committee, Commercial National Section, N.E.L.A., held in Salt Lake City.

H. H. Schoolfield, chief engineer, Pacific Power & Light Company, Portland, a short time ago visited New York City on company business.

Prof. C. D. Marx, emeritus professor of civil engineering at Stanford University, Palo Alto, Calif., has become chairman of the Engineering Foundation's committee on arch dam investigation. Professor Marx succeeds Prof. Charles Derleth, Jr., of the University of California, Berkeley, who has resigned.

W. S. Etheridge, formerly assistant sales manager, Edison Electric Appliance Company, Chicago, has been made general sales manager for the Hamilton-Beach Manufacturing Company, Racine, Wis.

J. S. Moulton, assistant to the executive engineer, San Joaquin Light & Power Corporation, Fresno, Calif., was a recent visitor in San Francisco on business. While there he attended the monthly meeting of the Electric Transportation Association.

Eliot Conrey, formerly with the Pacific Gas and Electric Company, San Rafael, has become affiliated with Curtis Lighting of California, Inc., San Francisco, as sales engineer. Mr. Conrey will work with salesmen of the power companies, jobbers and contractor-dealers.

D. E. Harris, president of the Pacific States Electric Company, was a recent business visitor in Los Angeles.

H. H. Walker of the H. H. Walker Company, electragist, **W. L. Frost** of the Southern California Edison Company and **Frank Weiss** of the Los Angeles Gas and Electric Corporation, all of Los Angeles, were in San Francisco recently attending meetings of the N.E.L.A. committees and the advisory committee of the California Electrical Bureau.

W. S. Gifford, president of the American Telephone & Telegraph Company, **General J. J. Carty,** vice-president, and **J. D. Ellsworth,** assistant to the president, were recent visitors in Salt Lake City.

S. E. Gates, Los Angeles branch manager of the General Electric Company, was a recent visitor in San Diego.

E. J. Cipperly, industrial heating specialist for the General Electric Company, spent several days in San Diego not long ago.

Hoyt Catlin, formerly advertising manager, Bryant Electric Company, Bridgeport, Conn., will enter the advertising agency business as associate and production manager of E. T. T. Williams and Associates, New York City, Jan. 1, 1926. At one time in his career Mr. Catlin spent two years in the Yakima Valley, Wash., in the employ of the Pacific Power & Light Company, Portland.

Ray Turnbull, Seattle representative of the Edison Electric Appliance Company, has gone East on a business trip, which will include New York and Chicago.

Harry Byrne, president North Coast Electric Company, Seattle, recently left for a three weeks trip to California.

H. H. Watson, superintendent of Construction for the Byllesby Engineering and Manufacturing Corporation at the San Diego Consolidated Gas & Electric Company property, attended the recent Chicago convention of Byllesby construction superintendents.

Ray Robinson, of the Robinson Sales Company, Seattle, recently returned from a trip to California, with an enthusiastic report on the doings of the Electrical Development League of San Francisco.

Miss Bernice Lowen, home economist of the Edison Electric Appliance Company, Ontario, Calif., presided over a cooking school held under the auspices of the Spokane Chronicle in Spokane a short time ago. The school was attended by over 6,000 women and was regarded as entirely successful. During the following week Miss Lowen conducted a school in the Electric Shop of The Washington Water Power Company.

Harold S. Smith, formerly with the Pacific States Electric Company, Fresno, Calif., has been manager of the Seattle store of the newly incorporated firm of R. R. Poppleton, Inc. **V. E. Weber** has been named manager of the Portland branch.

T. W. Carlson has been appointed resident representative of the Benjamin Electric Manufacturing Company, Chicago, for the Northwest with offices at 422 L. C. Smith Building, Seattle, succeeding **T. F. McDonough.** Mr. McDonough has been transferred to Los Angeles where, with **G. J. Thom,** who is working on radio and specialties, he has headquarters at 600 I. W. Hellman Building and handles Benjamin business in southern California. **H. J. Mayo,** who formerly represented the Benjamin Electric Manufacturing Company in southern California, now is representing Listenwalter & Gough, Inc., in that territory.

Robert Miller, manager of the General Electric Company's Denver office, was in Salt Lake City a short while ago.

B. C. J. Wheatlake, A. E. Anderson and **G. N. Robinson,** of the Salt Lake City offices of the General Electric Company, attended the recent convention of the Wyoming Utility Association at Cheyenne.

D. C. Green, vice-president and generad manager of the Utah Power & Light Company, returned to Salt Lake City during the early part of November, after a two weeks trip to the New York offices of the Electric Bond & Share Company.

C. W. Koiner, formerly city manager of Pasadena, Calif., has returned from a European trip of several months duration. Mr. Koiner was one of the delegates from the United States to the annual Congress of Cities held in Paris in September.

L. R. Brown, manager transformer sales division, General Electric Company, Pittsfield; **Leeland Granger,** superintendent distribution and transmission, Detroit Edison Company, and **E. M. Ellis** and **J. O. Case** of the Los Angeles offices of the General Electric Company, were visitors in San Diego lately.

John Cooper, Mountain division representative, attended the recent conference of the National League Council held in connection with the semi-annual meeting of the Electrical Supply Jobbers' Association in Buffalo, N. Y.

Guy W. Talbot, president of the Pacific Power & Light Company and Northwestern Electric Company, Portland, has returned from Chicago where he attended N.E.L.A. committee meetings. He also visited New York on business for his companies.

Charles Wright, formerly with the Economy Fuse Company, Seattle, in the Spokane territory, is now district representative for that firm, with offices in the Henry Building, Seattle.

E. O. Shreve, manager of the General Electric Company's San Francisco branch, was a recent visitor in Salt Lake City, on his return trip to San Francisco after a visit to his company's works at Schenectady.

R. P. Crippen, formerly in charge of the relay work of the Great Western Power Company of California has resigned to accept a position with the Carolina Power & Light Company at Raleigh, N. C. He will be associated with **J. H. Paget** who is superintendent of power for the Carolina company. Mr. Paget was formerly with the Great Western Power Company as meter and relay engineer.

Thomas Traynor has been made retail relations manager for the Pacific States Electric Company with headquarters in Oakland. Mr. Traynor was formerly secretary, Alameda County Radio Dealers' Association; secretary, San Francisco Retail Radio Dealers' Association, and retail field representative, Pacific Radio Trades Association.

E. R. Stauffacher, protection engineer, and **L. L. Dyer,** superintendent of substation operation, Southern California Edison Company, spent several days with the San Diego Consolidated Gas and Electric Company in December.

L. J. O'Brien, formerly with the Great Western Power Company of California, San Francisco, has recently been appointed the representative of the Malleable Iron Range Company of Beaver Dam, Wis. Mr. O'Brien has jurisdiction over California, Nevada, and Western Arizona for the Monarch electric range manufactured by that company.

Lewis A. McArthur, vice-president and general manager, Pacific Power & Light Company, Portland, lately visited Spokane in order to confer with **Lewis A. Lewis,** president of the Northwest Electric Light and Power Association, on general committee work.

Walter F. Price, formerly with the Arrow Electric Company, San Francisco, has resigned to become affiliated with the Fred T. Wood Company, Inc., realtors of Oakland, Calif. Mr. Price was executive secretary of the California Electragists prior to his connection with the Arrow Electric Company.

William Trudgian, of the Westinghouse Electric & Manufacturing Company in Denver, was made the recipient of the "C" medal awarded annually to the alumnus of the University of Colorado who has contributed materially to the athletic welfare of the institution at the recent Homecoming Day exercises at the university.

Obituary

F. W. Willcox, a well-known figure in the electrical industry, died in New York Dec. 1. He began his electrical career with the Thomson-Houston Electric Company, Atlanta, remaining with them until 1895 when he joined the Edison Lamp Works of the General Electric Company at Harrison, N. J. In 1910 he went to South America to undertake special lamp work, and early in February, 1911, he became connected with the British Thomson-Houston Company, England, where he later became general manager of the lamp and wiring supplies department. In November, 1923, he returned to the Edison Lamp Works where until the time of his death he was engaged on special duties. He was a pioneer as a commercial engineer.

Franklin I. Fuller, first vice-president, Portland Electric Power Company, Portland, died at his home Dec. 16, 1925, of acute indigestion, after an illness of only two days, at the age of sixty-seven. He was born in Providence, R. I., May 29, 1858. After studying civil engineering in school, Mr. Fuller applied this profession in the office of the city engineer of Providence for some years. Later he took up railroad work and was engaged in location and construction work in New York and Wisconsin. After arriving in Oregon, he became connected with the North Pacific Terminal Company and later held the position of assistant manager of the Oregon Iron & Steel Company, Oswego, Ore. His association with the street railways of Portland dates from 1892 when he became connected with the Portland Cable Railway Company, one of the original lines in the city, of which he soon became manager. He held this position through numerous mergers and consolidations until 1906 when all the street railway lines and power and light interests in the city were merged into the Portland Railway Light & Power Company. At this time Mr. Fuller was made vice-president in charge of transportation. His greatest engineering achievement was the construction, against the advice of other railroad engineers, of the Portland Heights line, now remaining one of the most scenic street railways in the country.

FRANKLIN I. FULLER

O. C. Miller, underground electrical engineer, Los Angeles Gas and Electric Corporation, died suddenly in that city Dec. 11.

L. H. Griffith, credited with being the builder of the first Seattle-Tacoma electric line in 1891, and connected with other power and transportation activities, died in Seattle Dec. 14.

TRADE NOTES

General Electric Company, Schenectady, has issued bulletin No. GEA-178, entitled "Instrument Transformers", a 52-page, paper-bound booklet devoted to the theory and engineering characteristics of transformers used to facilitate the measurement of electrical qualities.

Pittsburgh Transformer Company, Pittsburgh, has issued bulletin No. 2049 describing the developments in the transformer art in recent years of the Pittsburgh polyphase transformer structure, the Pittsburgh film-type radiator and the expansion tank for transformers. The bulletin is illustrated with diagrams and photographs.

The Wheeler Reflector Company, Boston, has issued a new catalog describing and listing its different types of industrial fixtures. The catalogs are being distributed by the **H. B. Squires Company,** San Francisco, representatives for the company.

Texas Creosoting Company, Orange, Texas, recently has brought out an interesting booklet entitled, "Enemies of Your Pole Lines," for the light and power and telephone industries. The booklet describes the qualities of properly creosoting Southern yellow pine poles that make them resistant to inroads from decay, termites and fire.

W. P. Fuller & Company, San Francisco, has issued Industrial Bulletin No. 4 on the subject of wood preservatives. This bulletin is one of a series which the company is publishing with a view to creating a reference work on the subject of industrial paints.

The Westinghouse Electric & Manufacturing Company, East Pittsburgh, is offering an elliptical angle reflector, in which the bowl of the reflector is flattened into the form of an ellipse. This reflector is so designed as to build up the illumination between units.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has opened a branch sales office at Houston, Texas, in charge of R. I. Moore, who previously was connected with the firm's Dallas office. Temporary quarters are being occupied at 231 Rodgers Building, but after the first of the year the office will be located permanently at 1108 Post Dispatch Building.

Charles Engelhard, Inc., New York City, has developed a mercury contact switch which it is claimed is unfailing in its operation. It is claimed further that with this switch there can be no loose connections, and dirty contacts and corrosion are impossible.

Bernard Rowntree, Los Angeles, has been appointed sales representative in California, Oregon and Washington for the Magicoal electric fires, manufactured by Berry's Electric, Ltd., New York City; for electric coffee cutters, products of S. M. Nevius, Inc., Hornell, N. Y., and synthetic ivory switch plates put out by the Ivori-Craft, Inc., Newark, N. J.

Lincoln Electric Company, Cleveland, has issued a new catalog dealing with welding machines and supplies, including cables, glass, shields, welding electrode, aprons, gloves, brushes, elec-

The Servel Corporation, New York, has enlarged its floor space by taking the entire seventeenth floor in addition to the eighteenth floor it now occupies in the Vanderbilt Avenue Building, New York City.

Hanson Wholesale Electric Company has been appointed agent for the distribution of the Savage washer and dryer in the Intermountain country, with offices in Denver, Cheyenne, Salt Lake City, and Brigham City, Utah.

Western Sales & Equipment Company is a newly established manufacturers' agent for the Hamilton Beach Company, Conlon washer, Robbins & Myers, Reutenber Electric Company and several other accounts. The company will be located at 503 Fourteenth Street, Denver. W. I. Burt, W. J. Laufenburg, W. H. Orr and W. Moore are members of the firm.

Pacific Electric Manufacturing Company, San Francisco, has issued bulletin No. 504, describing and illustrating high-tension switches and giving details of the Pacific fuse and support type 522 and the type 500. In bulletin 9,000, issued recently, complete descriptions are given of the Pacific multi-break oil circuit breakers.

Delta-Star Electric Company, Chicago, in its Dec. 15 issue of the Delta Star Monthly, gives an interesting description of a standard outdoor construction for voltage up to 132 kv. Copies will be sent upon request.

Harvey Hubbell, Inc., Bridgeport, Conn., has announced a new line of square handle toggle switches, which are equipped with a new simplified "lock and release" mechanism. The handle of the switch operates directly on the "lock and release" movement instead of through a secondary member, resulting in a smooth and positive action.

Some electrical men try for "birdies" on the golf course, but L. M. Cargo, Rocky Mountain district manager of the Westinghouse Electric & Manufacturing Company, gets birdies another way. A great nature lover, Mr. Cargo has trained a flock of pigeons to visit him daily in his office on the top floor of the Gas & Electric Building in Denver. Winter and summer these feathered visitors come to be fed at the edge of his desk.

Edwin L. Wiegand Company, Pittsburgh, has issued bulletin C-100 which covers its complete line of Chromalox products and is now ready for distribution. This company is bringing out a new refractory heater which will be termed a space heater, differentiating it from the company's standard product known as strip heaters in that this new unit will be made in 2-ft. lengths only, designed for 500 watts in the following voltages, 110, 220 and 250. It is a somewhat lighter heater to meet the demand of open-air space heating. The company is represented on the Pacific Coast by the **Electric Materials Company,** 589 Howard Street, San Francisco.

Taylor Instrument Companies, Rochester, has issued a new 56-page catalog No. 4,000, which fully illustrates and describes its Tycos pyrometers. Tycos recording-pyrometer charts and price lists also are included in the bulletin.

Pass & Seymour, Inc., Syracuse, has placed on the market a new bracket type porcelain receptacle for use as a side wall bracket with flush boxes. It is made in two styles, the P & S 844 with porcelain ring for ball lamps and the P & S 845 with porcelain shade holder for bracket glassware. Both are fitted with rugged pull chain, and are suggested for use in bathrooms, barger shops, hospitals, kitchens, etc.

Hamilton-Beach Manufacturing Company, Racine, Wis., has appointed W. S. Etheridge general sales manager for the company. Mr. Etheridge formerly was connected with the Edison Electric Appliance Company, Chicago, as assistant sales manager.

United Electric Company, Canton, Ohio, has made new improvements in both its model 5 Ohio cleaner and its new Gem cleaner. The Ohio cleaner now is made with a larger bag and a new type name plate, while the Gem also has many new features.

Sangamo Electric Company, Springfield, Ill., has issued bulletin No. 70, giving instructions on the Sangamo type H single and polyphase watthour meters.

Electric Service Supplies Company, Philadelphia, has issued bulletin No. 216 on floodlighting. The booklet is illustrated with photographs of the latest type of floodlighting equipment, as well as views of various applications. Charts and diagrams furnishing specific data also are given.

Electrical Engineers Equipment Company, Chicago, has issued recently bulletin No. 112, containing 143 pages of detailed data on indoor switching equipment.

Gillinder Bros. Glass Company has designated the Wesco company in Denver as manufacturers' agent for its products in the Mountain region.

Pittsburgh Transformer Company, Pittsburgh, has issued bulletin 2050 covering Pittsburgh polyphase transformers, with a complete discussion on the importance of low exciting current and its value in the operation of transformers. It also draws attention to other points of saving through the use of Pittsburgh transformers.

Edison Electric Appliance Company, Inc., Los Angeles, is established at 327 West Second Street, where it is occupying ground floor space, which is more accessible to the public. The concern formerly was located at 505 Equitable Building.